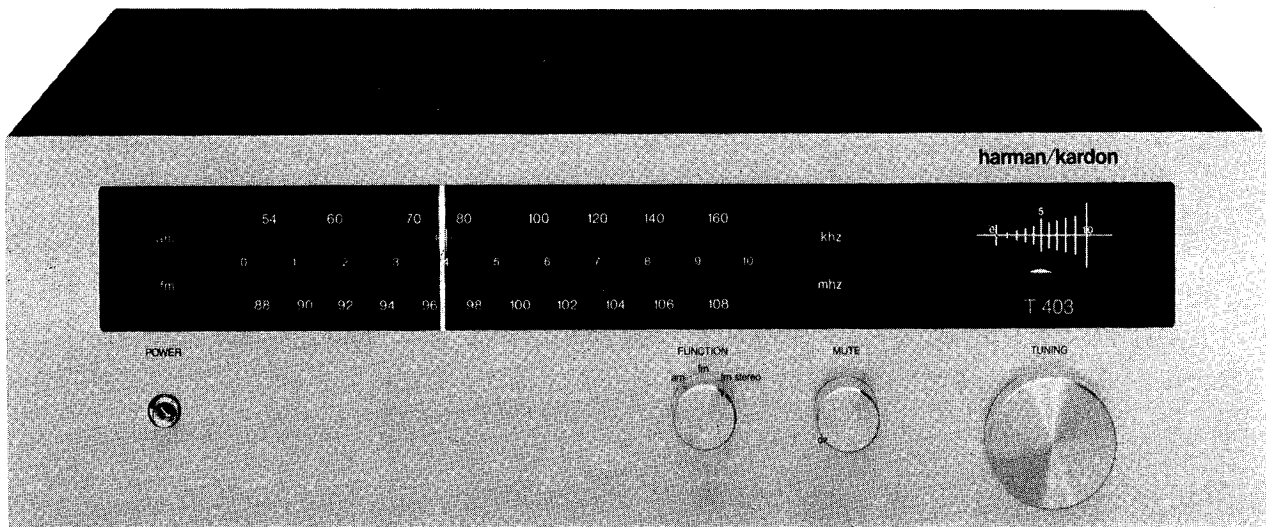


The Harman/Kardon Model T403

AM/FM/Stereo FM Solid State Tuner

Technical Manual



harman/kardon

PRECAUTIONS

1. Always disconnect the chassis from power line when soldering. Turning the power switch OFF is not enough. Power line leakage passing through the heating element may destroy the transistors.
2. Never attempt to do any work on the transistor amplifiers without first disconnecting the AC line cord and waiting until the power supply filter capacitors have discharged.
3. Replacement for output and driver transistors, if necessary, must be made from the same beta groups as the original type.
4. If one output transistor burns out (open or short) always remove all the output transistors in that channel and check the bias adjustment, the control and other parts in the network with an ohmmeter before inserting a new transistor. All transistors in one channel will be destroyed if the base biasing circuit is open on the emitter end.
5. When mounting a replacement power transistor, be sure that the bottom of the flange, the mica insulators and the surface of the heat sink are free of foreign matter, for they may cause transistor failure.
6. Silicon grease must be applied between the transistor and the mica insulator, and between the mica insulator and the heat sink for better heat conduction.
7. Fuses must be replaced with size and type indicated. Use of other types can expose components to destructive current levels.

ALIGNMENT PROCEDURES

AM ALIGNMENT PROCEDURE

INSTRUMENTS: AM Signal Generator modulated with 400Hz at 30%.
VTVM and Oscilloscope.

NOTE: Set Function Selector switch to AM position.
Connect signal source to a placed to radiate signal into AM Antenna
Loop Stick (L2).

Step	SIGNAL SOURCE	CONNECT OUTPUT METER TO	DIAL SETTING	ADJUST	ADJUST FOR
1	455kHz AM Mod.	VTVM and Oscilloscope to R269	Tuning gang open	T251	Maximum reading on VTVM and undistorted pattern on Oscilloscope
2				T252	
3				T253	
4	Repeat Steps 1 through 3 for best sensitivity.				
5	600kHz AM Mod.	Same as above	600kHz	L252	Maximum output
6	1600kHz AM Mod.	Same as above	1600kHz	TC251	Same as above
7	Repeat Steps 5 and 6 for best dial accuracy.				
8	600kHz AM Mod.	Same as above	600kHz	L2	Same as above
9	1600kHz AM Mod.	Same as above	1600kHz	TC252	Same as above
10	Repeat Steps 8 and 9 for best sensitivity.				

TUNING METER ALIGNMENT PROCEDURE

INSTRUMENT: FM Signal Generator.

NOTE: Set Function Selector switch to FM position.
Connect signal source to FM Antenna Terminal.

Step	SIGNAL SOURCE	DIAL SETTING	ADJUST	ADJUST FOR
1	98MHz 1mV (60dB)	98MHz	VR201	Maximum needle deflection Tuning Meter
2	Same as above	Same as above	VR202	To indicate 95% on Tuning Meter

AM OUTPUT LEVEL ALIGNMENT PROCEDURE

INSTRUMENTS: AM Signal Generator modulated with 400Hz at 30%.
VTVM.

NOTE: Set Function Selector switch to AM position.
Connect signal source to a placed to radiate signal into AM Antenna
Loop Stick (L2).

SIGNAL SOURCE	CONNECT OUTPUT METER TO	DIAL SETTING	ADJUST	ADJUST FOR
1000kHz 5mV/m (74dB)	VTVM to Fixed Output Jack	1000kHz	VR101	0.6V

FM ALIGNMENT PROCEDURE

INSTRUMENTS: FM Signal Generator modulated with 400Hz at 75kHz.
VTVM and Oscilloscope.

NOTE: Set Function Selector switch to FM position.
Connect signal source to FM Antenna Terminal.

Step	SIGNAL SOURCE	CONNECT OUTPUT METER TO	DIAL SETTING	ADJUST	ADJUST FOR
1		Oscilloscope to R226	Tuning gang closed	T202 Top	Zero Volt DC
2		Same as above	Same as above	T202 Bottom	Maximum noise
3		Same as above	Same as above	T201 top and bottom	Same as above
4	Repeat Steps 1 through 3 until no further improvement is noticed.				
5	88MHz FM Mod.	VTVM and Oscilloscope to Fixed Output Jack	88MHz	L201	Maximum output
6	108MHz FM Mod.	Same as above	108MHz	TC201	Same as above
7	Repeat Steps 5 and 6 for best dial accuracy.				
8	90MHz FM Mod.	Same as above	90MHz	L202 T203	Same as above
9	106MHz FM Mod.	Same as above	106MHz	TC202 TC203	Same as above
10	Repeat Steps 8 and 9 for best sensitivity.				

FM STEREO INDICATOR LAMP ALIGNMENT PROCEDURE

INSTRUMENT: FM Stereo Simulator.

NOTE: Set Function Selector switch to FM STEREO position.
Connect signal source to FM Antenna Terminal.
Set Main signal OFF and Pilot signal (10%) ON of FM Stereo Simulator.
Set VR302 fully clockwise.

Step	SIGNAL SOURCE	DIAL SETTING	ADJUST	ADJUST FOR
1	98MHz 25 μ V (34dB)	98MHz	VR302	Turn VR302 counterclockwise until FM Stereo Indicator Lamp just goes ON
2	To raise the signal source by 1dB and confirm that FM Stereo Indicator Lamp lights at this position.			

MPX ALIGNMENT PROCEDURE

INSTRUMENT: Frequency Counter.

NOTE: Set Function Selector switch to FM STEREO position.
Set Muting switch to ON position.

CONNECT OUTPUT METER TO	DIAL SETTING	ADJUST	ADJUST FOR
Frequency Counter to LP205	Quiet Point	VR301	19kHz \pm 50Hz

ALIGNMENT PROCEDURES

AM ALIGNMENT PROCEDURE

INSTRUMENTS: AM Signal Generator modulated with 400Hz at 30%.
VTVM and Oscilloscope.

NOTE: Set Function Selector switch to AM position.
Connect signal source to a placed to radiate signal into AM Antenna
Loop Stick (L2).

Step	SIGNAL SOURCE	CONNECT OUTPUT METER TO	DIAL SETTING	ADJUST	ADJUST FOR
1	455kHz AM Mod.	VTVM and Oscilloscope to R269	Tuning gang open	T251	Maximum reading on VTVM and undistorted pattern on Oscilloscope
2				T252	
3				T253	
4	Repeat Steps 1 through 3 for best sensitivity.				
5	600kHz AM Mod.	Same as above	600kHz	L252	Maximum output
6	1600kHz AM Mod.	Same as above	1600kHz	TC251	Same as above
7	Repeat Steps 5 and 6 for best dial accuracy.				
8	600kHz AM Mod.	Same as above	600kHz	L2	Same as above
9	1600kHz AM Mod.	Same as above	1600kHz	TC252	Same as above
10	Repeat Steps 8 and 9 for best sensitivity.				

TUNING METER ALIGNMENT PROCEDURE

INSTRUMENT: FM Signal Generator.

NOTE: Set Function Selector switch to FM position.
Connect signal source to FM Antenna Terminal.

Step	SIGNAL SOURCE	DIAL SETTING	ADJUST	ADJUST FOR
1	98MHz 1mV (60dB)	98MHz	VR201	Maximum needle deflection Tuning Meter
2	Same as above	Same as above	VR202	To indicate 95% on Tuning Meter

AM OUTPUT LEVEL ALIGNMENT PROCEDURE

INSTRUMENTS: AM Signal Generator modulated with 400Hz at 30%.
VTVM.

NOTE: Set Function Selector switch to AM position.
Connect signal source to a placed to radiate signal into AM Antenna
Loop Stick (L2).

SIGNAL SOURCE	CONNECT OUTPUT METER TO	DIAL SETTING	ADJUST	ADJUST FOR
1000kHz 5mV/m (74dB)	VTVM to Fixed Output Jack	1000kHz	VR101	0.6V

FM ALIGNMENT PROCEDURE

INSTRUMENTS: FM Signal Generator modulated with 400Hz at 75kHz.
VTVM and Oscilloscope.

NOTE: Set Function Selector switch to FM position.
Connect signal source to FM Antenna Terminal.

Step	SIGNAL SOURCE	CONNECT OUTPUT METER TO	DIAL SETTING	ADJUST	ADJUST FOR
1		Oscilloscope to R226	Tuning gang closed	T202 Top	Zero Volt DC
2		Same as above	Same as above	T202 Bottom	Maximum noise
3		Same as above	Same as above	T201 top and bottom	Same as above
4	Repeat Steps 1 through 3 until no further improvement is noticed.				
5	88MHz FM Mod.	VTVM and Oscilloscope to Fixed Output Jack	88MHz	L201	Maximum output
6	108MHz FM Mod.	Same as above	108MHz	TC201	Same as above
7	Repeat Steps 5 and 6 for best dial accuracy.				
8	90MHz FM Mod.	Same as above	90MHz	L202 T203	Same as above
9	106MHz FM Mod.	Same as above	106MHz	TC202 TC203	Same as above
10	Repeat Steps 8 and 9 for best sensitivity.				

FM STEREO INDICATOR LAMP ALIGNMENT PROCEDURE

INSTRUMENT: FM Stereo Simulator.

NOTE: Set Function Selector switch to FM STEREO position.
Connect signal source to FM Antenna Terminal.
Set Main signal OFF and Pilot signal (10%) ON of FM Stereo Simulator.
Set VR302 fully clockwise.

Step	SIGNAL SOURCE	DIAL SETTING	ADJUST	ADJUST FOR
1	98MHz 25 μ V (34dB)	98MHz	VR302	Turn VR302 counterclockwise until FM Stereo Indicator Lamp just goes ON
2	To raise the signal source by 1dB and confirm that FM Stereo Indicator Lamp lights at this position.			

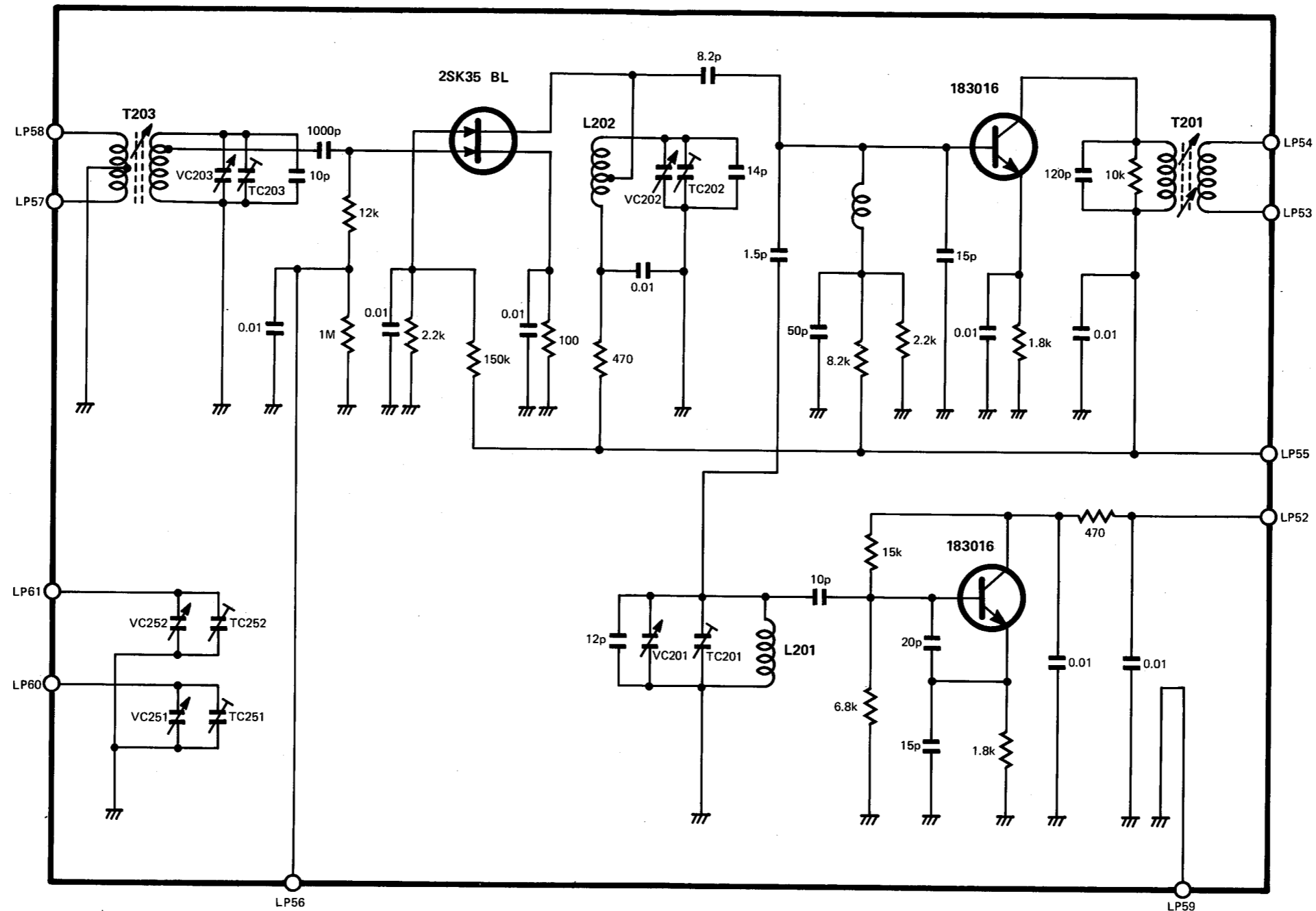
MPX ALIGNMENT PROCEDURE

INSTRUMENT: Frequency Counter.

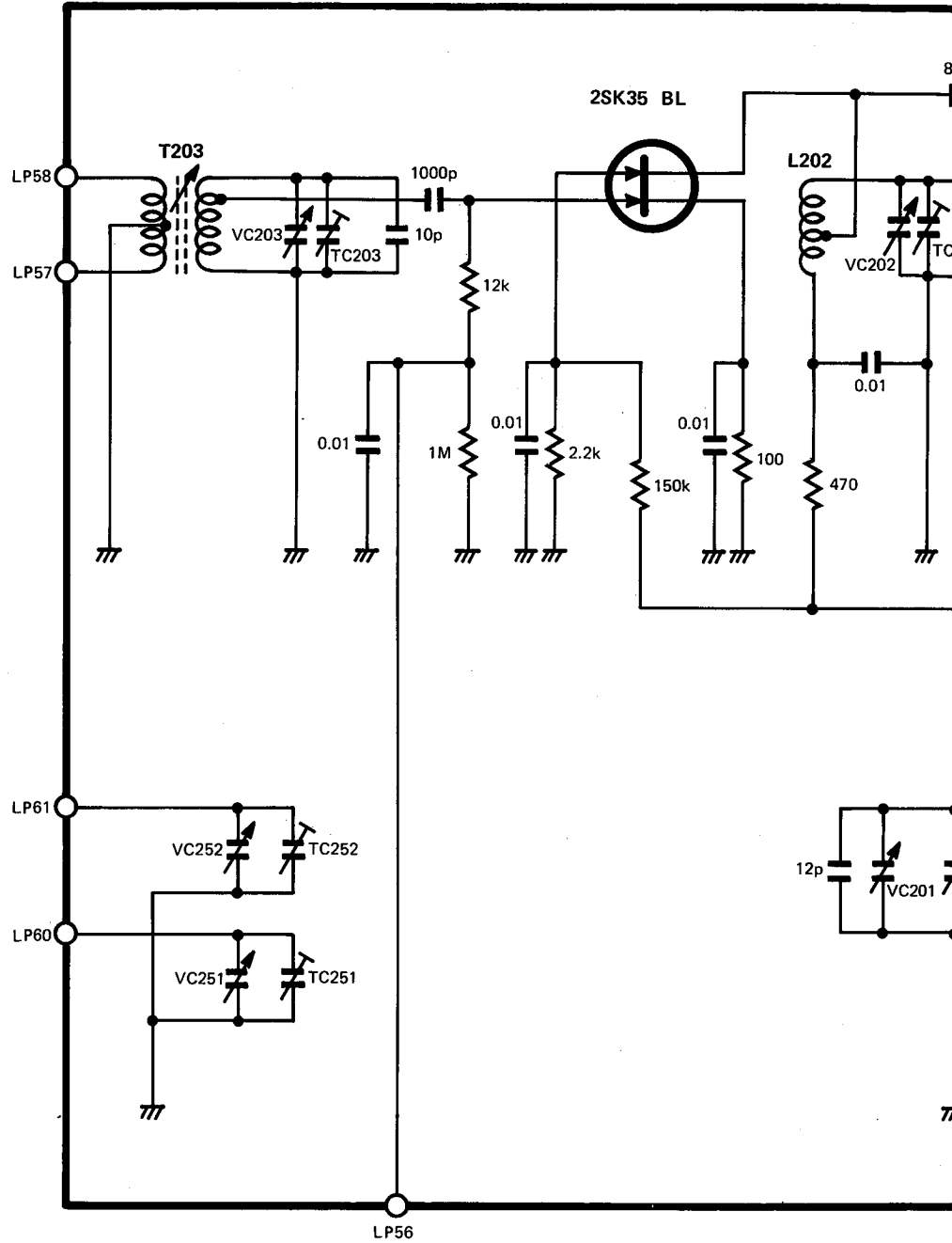
NOTE: Set Function Selector switch to FM STEREO position.
Set Muting switch to ON position.

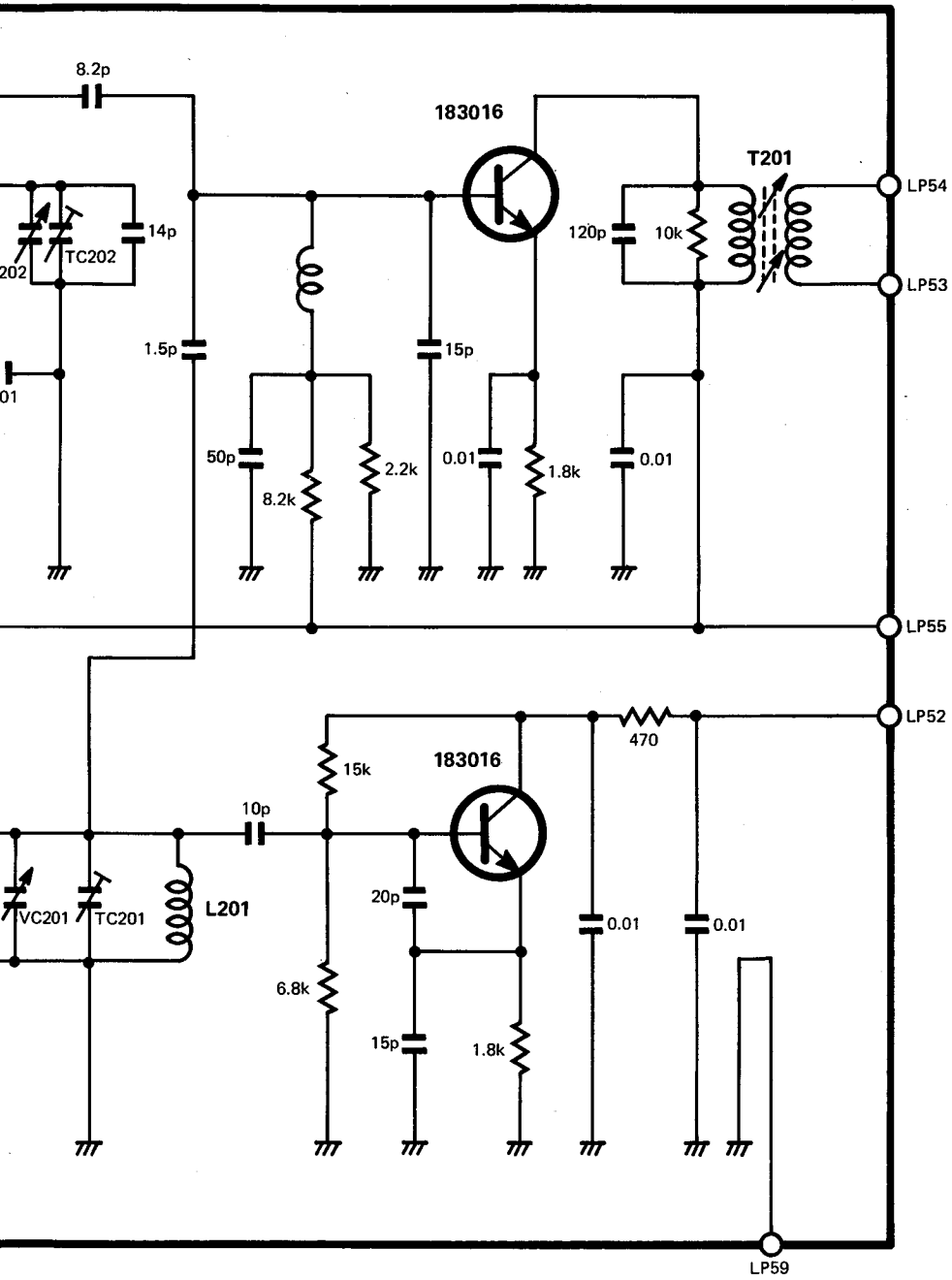
CONNECT OUTPUT METER TO	DIAL SETTING	ADJUST	ADJUST FOR
Frequency Counter to LP205	Quiet Point	VR301	19kHz \pm 50Hz

SCHEMATIC DIAGRAM – FRONT END

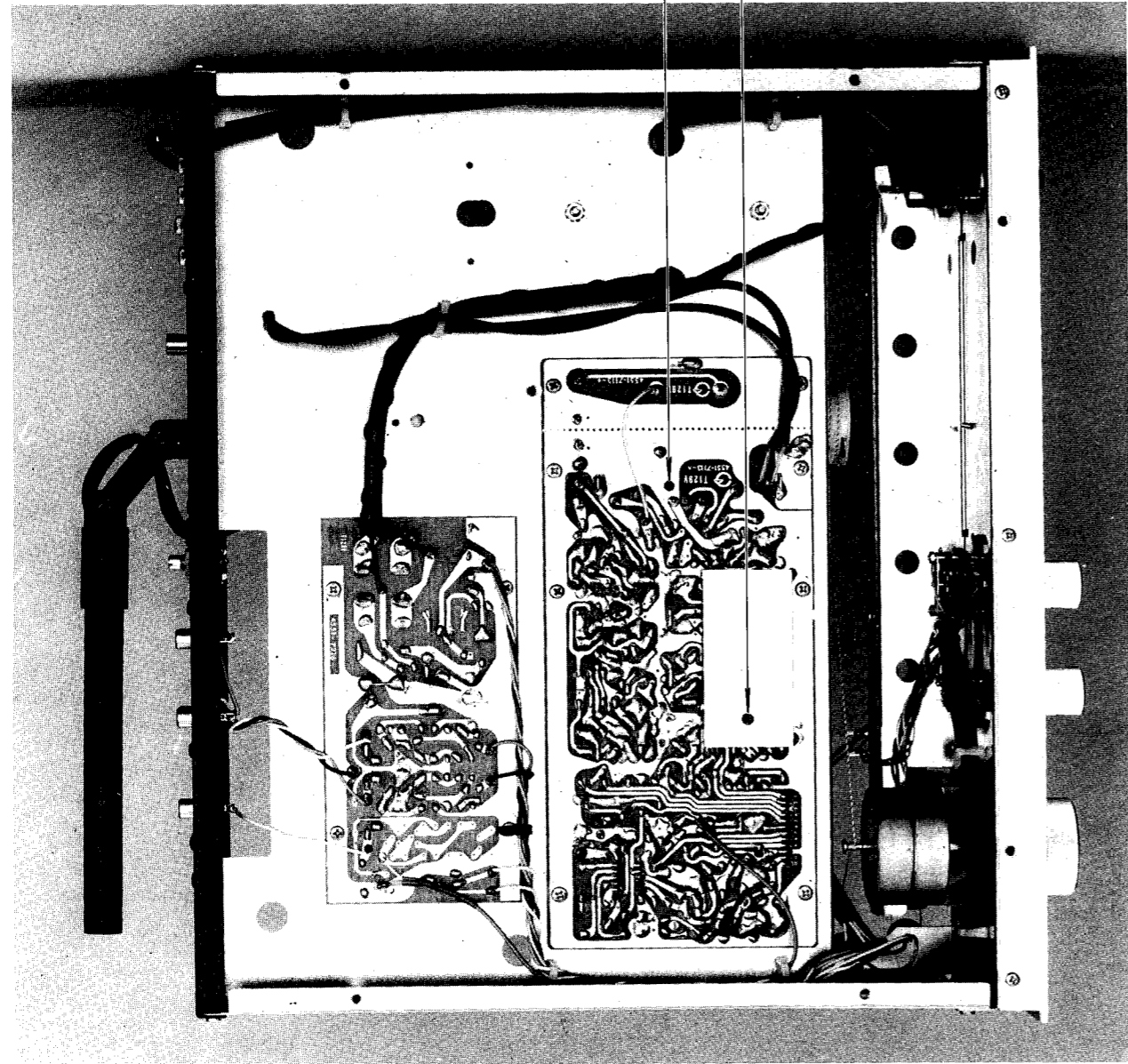


SCHEMATIC DIAGRAM – FRONT END

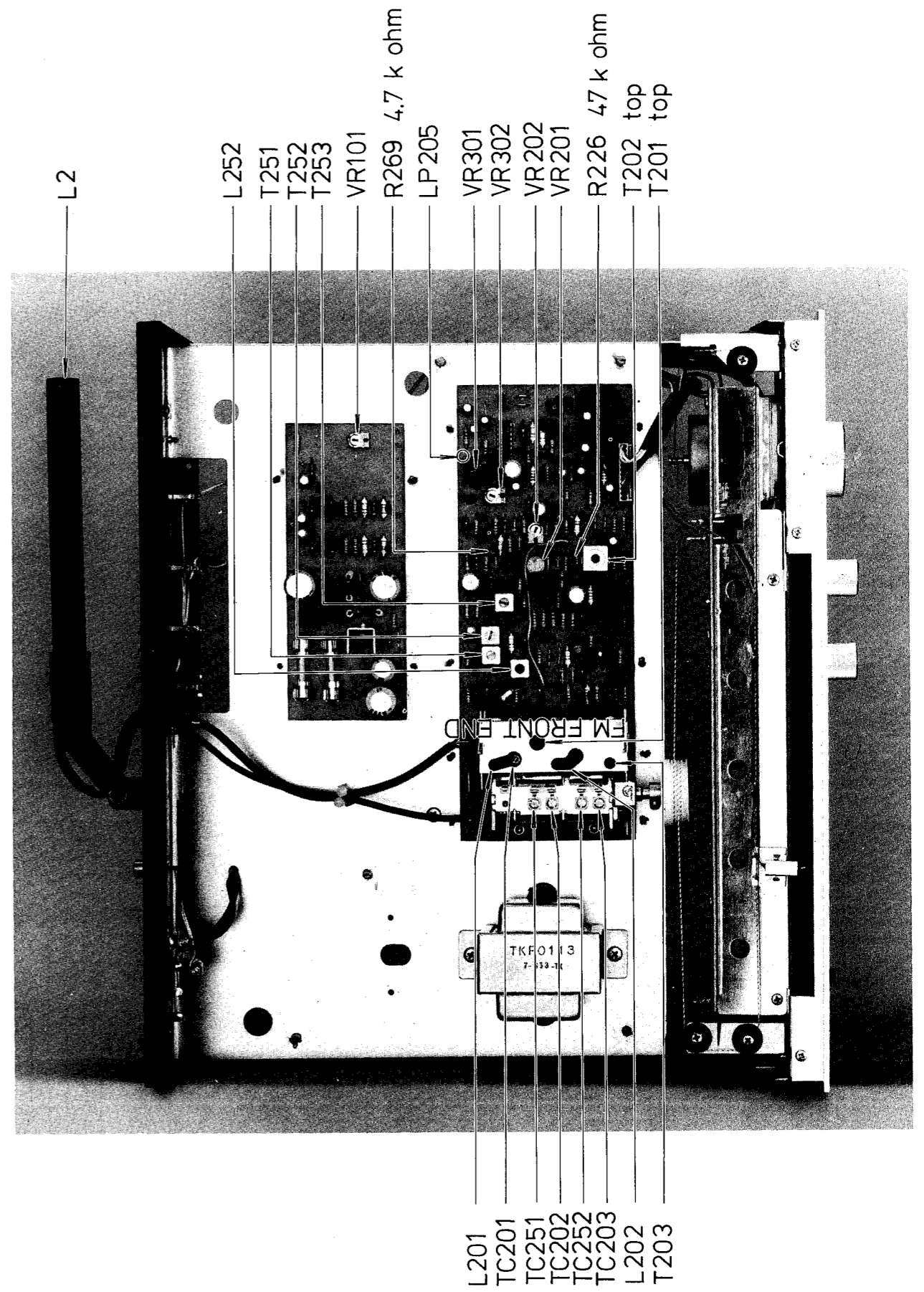




ALIGNMENT POINTS

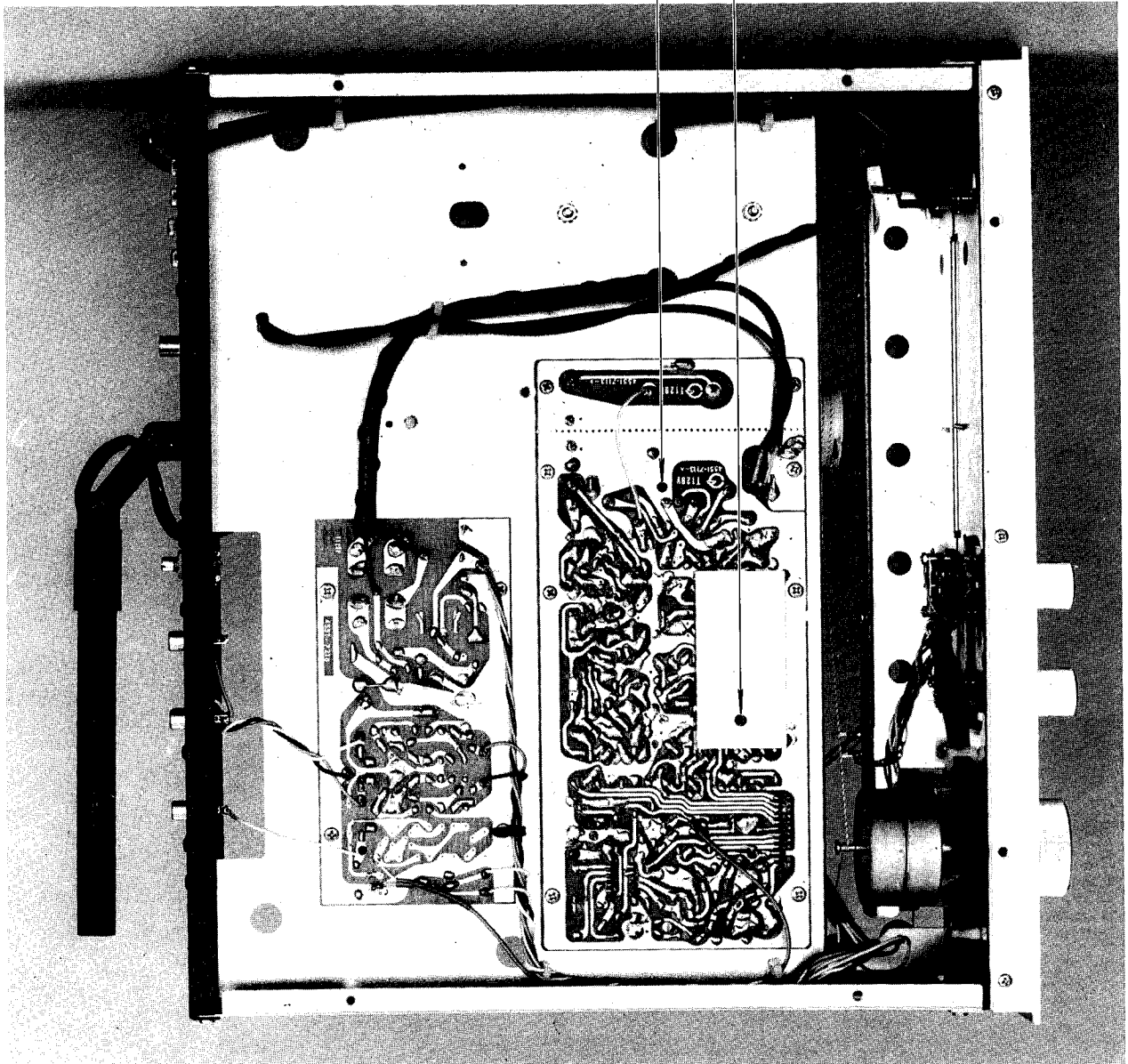


BOTTOM VIEW



TOP VIEW

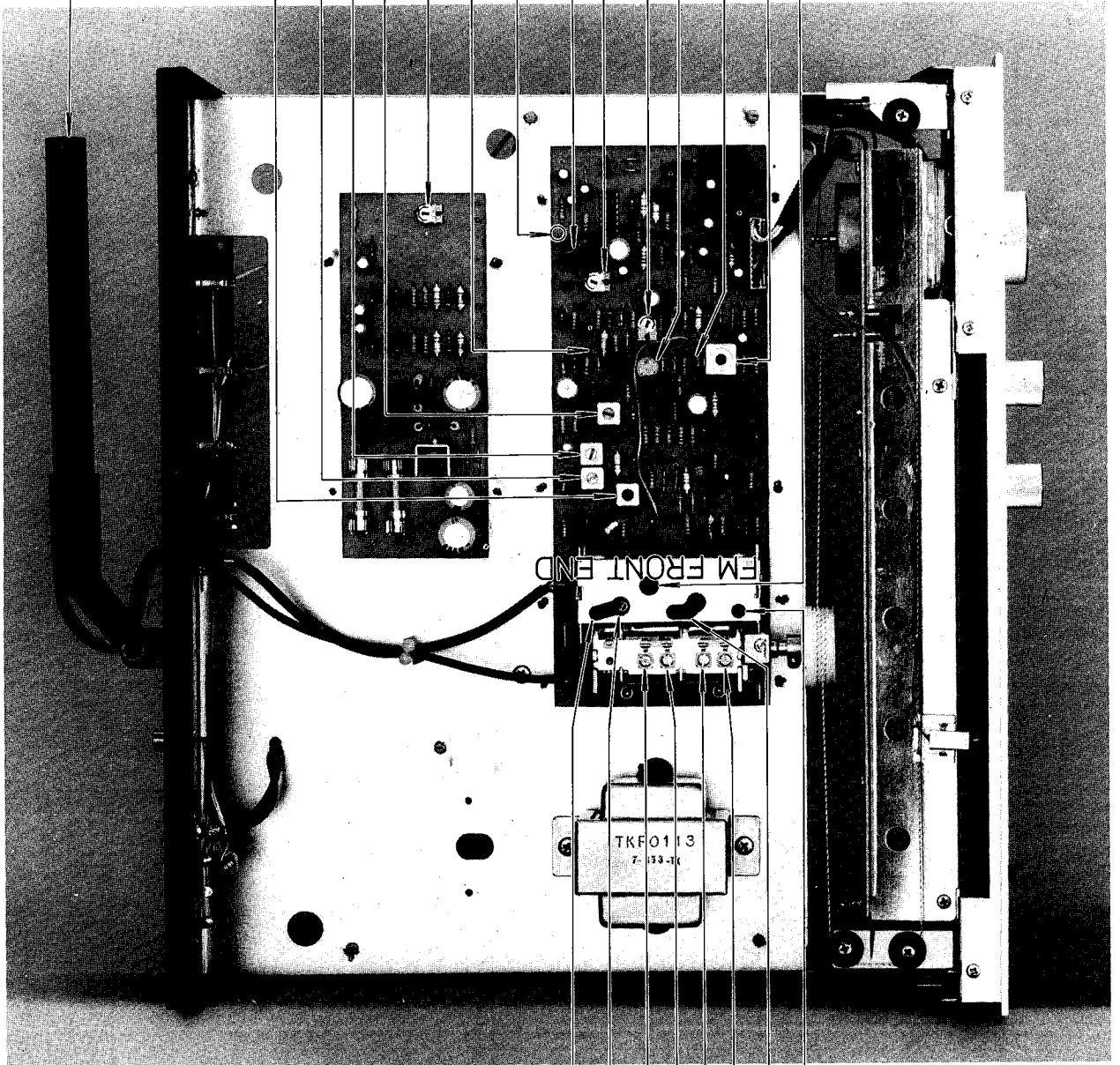
ALIGNMENT POINTS



T201 bottom

T202 bottom

BOTTOM VIEW

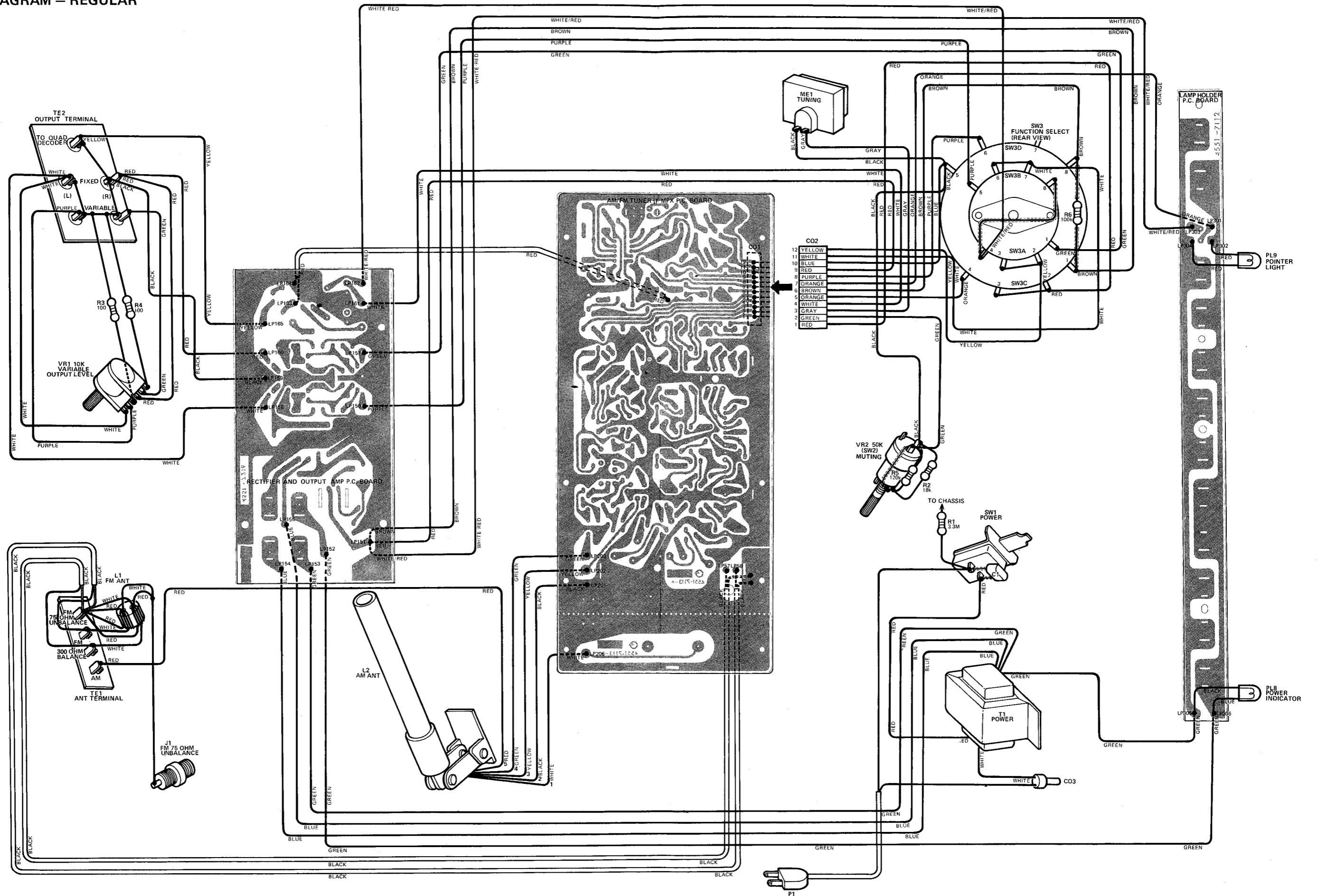


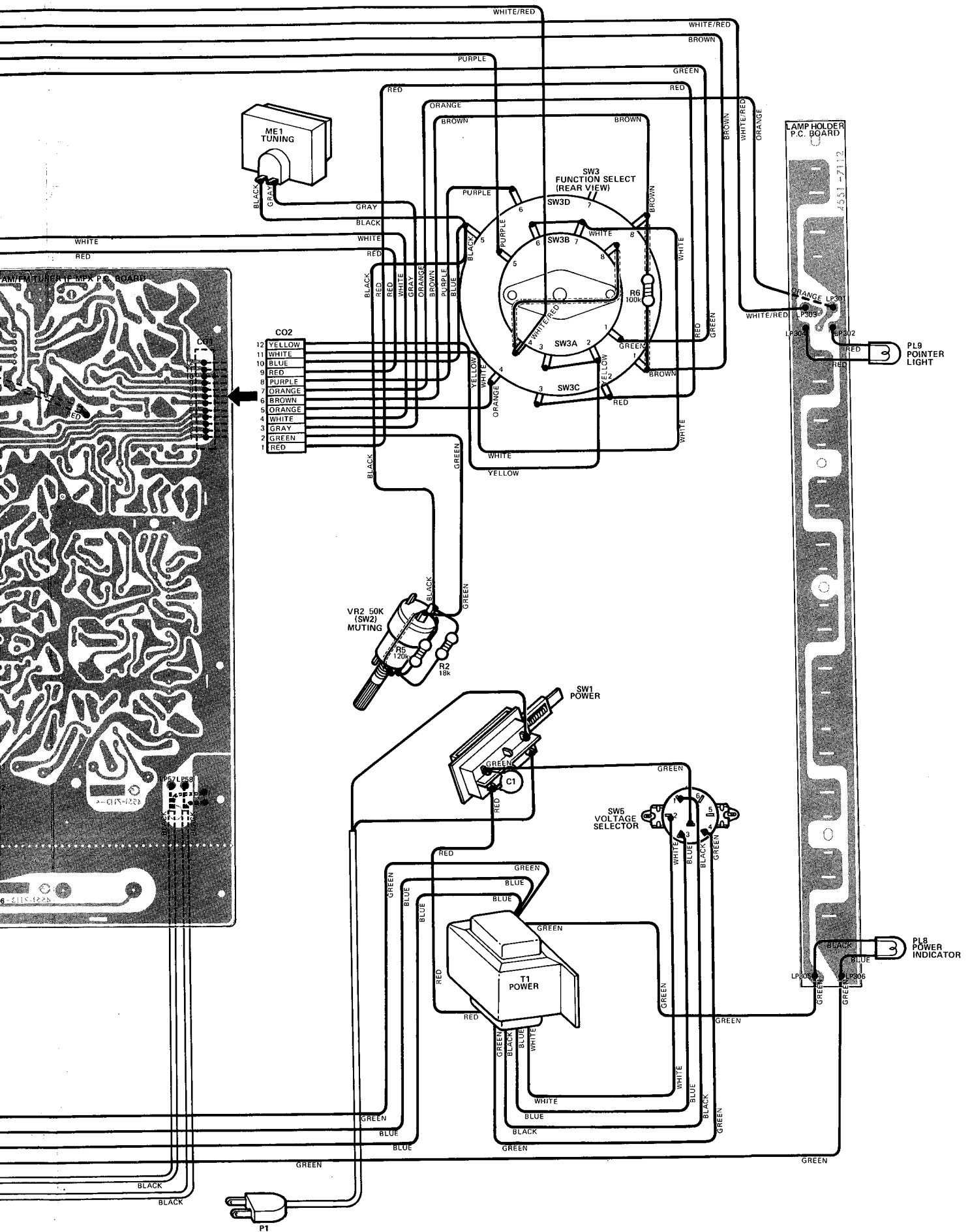
TOP VIEW

L201
 TC201
 TC251
 TC202
 TC252
 TC203
 L202
 T203

L252
 T251
 T252
 T253
 VR101
 R269 4.7 k ohm
 LP 205
 VR301
 VR302
 VR202
 VR201
 R226 47 k ohm
 T202 top
 T201 top

WIRING DIAGRAM — REGULAR





SCHEMATIC NOTES AND VOLTAGES

- NOTES:** Unless otherwise specified
1. All resistors are 1/4 watt, ±5%. Values are in ohms. K=1000 M=1000K
 2. All capacitance values are in UF unless noted otherwise. PF=UUF
 3. Function Selector switch (SW3) is in AM position.

VOLTAGE CHART

AC120V
No Signal
Chassis Ground

B1..... 24.50V
B2..... 11.75V

FM POSITION

	base	emitter	collector
Q101	12.38V	11.75V	23.60V
Q151, 152	4.12V	3.60V	18.84V
Q153, 154	18.84V	19.49V	10.24V
Q201	0.81V	0.11V	6.57V
Q202	0V	5.93V	0.43V
	(gate)	(drain)	(source)
Q203	5.77V	5.07V	10.52V
Q204	5.74V	5.07V	8.02V
Q205	0.06V	0V	7.56V
(Muting ON)			
Q206	0.61V	0V	0.09V
(Muting ON)	7.56V	6.10V	6.11V
	5.42V	6.10V	6.08V
Q301	1.78V	1.14V	4.46V
Q302	0.62V	0V	0.01V
Q303	8.13V	8.76V	4.85V
Q304	8.15V	8.79V	4.77V

AM POSITION

	base	emitter	collector
Q251	1.87V	1.32V	10.87V
Q252	1.08V	0.55V	10.89V
Q253	1.15V	0.50V	10.94V
Q254	1.70V	1.02V	6.77V
Q255	2.38V	1.73V	4.17V

IC201

1	1.38V
2	1.38V
3	0V
4	8.79V
5	9.47V

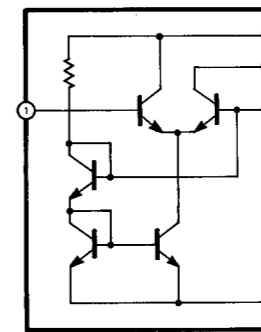
IC202

1	2.03V
2	2.03V
3	8.47V
4	0V
5	8.24V
6	2.04V
7	2.03V

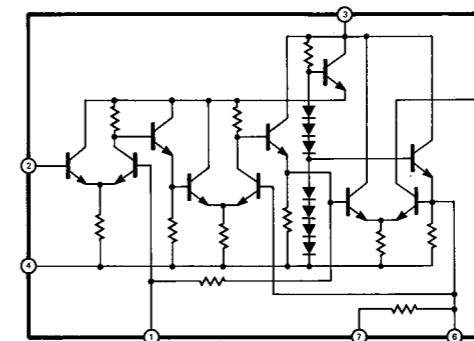
IC301

1	10.96V
2	3.80V
3	5.56V
4	8.15V
5	8.13V
6	11.76V
7	0V
8	0.11V
9	2.44V
10	1.64V
11	2.33V
12	2.51V
13	2.51V
14	3.01V

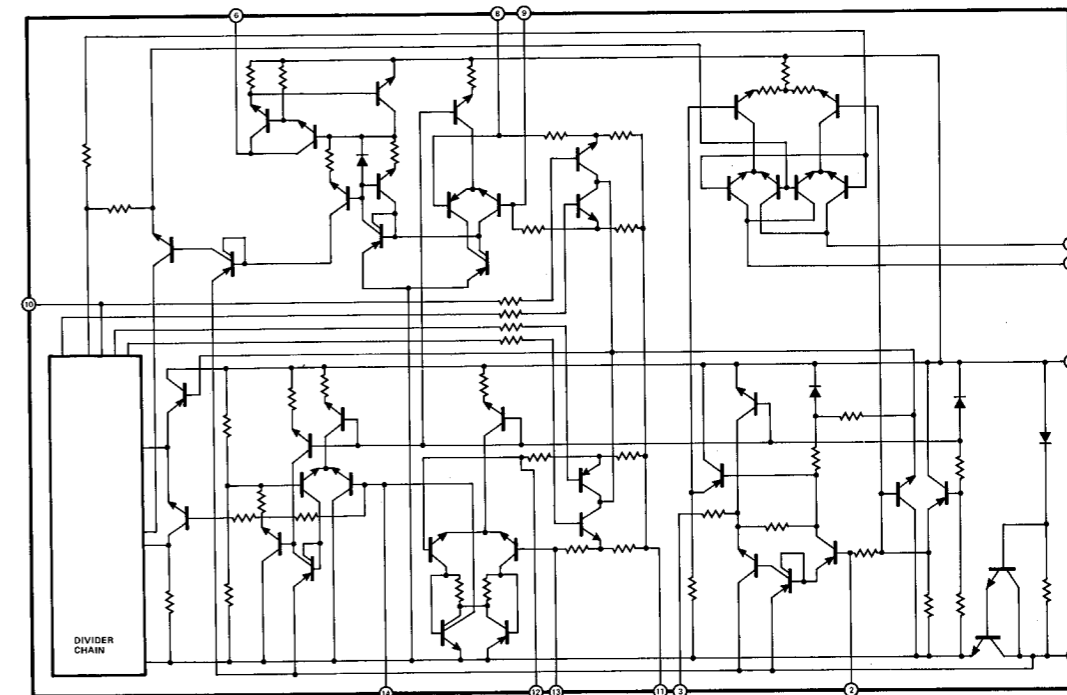
IC201



IC202



IC301



SCHEMATIC NOTES AND VOLTAGES

- NOTES:** Unless otherwise specified
1. All resistors are 1/4 watt, ±5%. Values are in ohms. K=1000 M=1000K
 2. All capacitance values are in UF unless noted otherwise. PF=UUF
 3. Function Selector switch (SW3) is in AM position.

VOLTAGE CHART

AC120V
No Signal
Chassis Ground

B1..... 24.50V
B2..... 11.75V

FM POSITION

	base	emitter	collector
Q101	12.38V	11.75V	23.60V
Q151, 152	4.12V	3.60V	18.84V
Q153, 154	18.84V	19.49V	10.24V
Q201	0.81V	0.11V	6.57V
Q202	0V	5.93V	0.43V
	(gate)	(drain)	(source)
Q203	5.77V	5.07V	10.52V
Q204	5.74V	5.07V	8.02V
Q205	0.06V	0V	7.56V
(Muting ON)			
	0.61V	0V	0.09V
Q206	7.56V	6.10V	6.11V
(Muting ON)			
	5.42V	6.10V	6.08V
Q301	1.78V	1.14V	4.46V
Q302	0.62V	0V	0.01V
Q303	8.13V	8.76V	4.85V
Q304	8.15V	8.79V	4.77V

AM POSITION

	base	emitter	collector
Q251	1.87V	1.32V	10.87V
Q252	1.08V	0.55V	10.89V
Q253	1.15V	0.50V	10.94V
Q254	1.70V	1.02V	6.77V
Q255	2.38V	1.73V	4.17V

IC201

1	1.38V
2	1.38V
3	0V
4	8.79V
5	9.47V

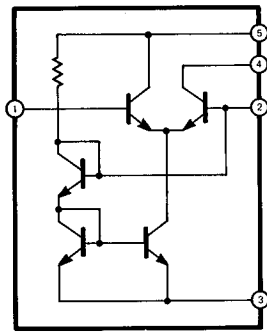
IC202

1	2.03V
2	2.03V
3	8.47V
4	0V
5	8.24V
6	2.04V
7	2.03V

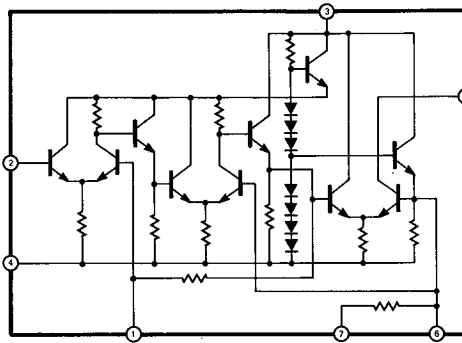
IC301

1	10.96V
2	3.80V
3	5.56V
4	8.15V
5	8.13V
6	11.76V
7	0V
8	0.11V
9	2.44V
10	1.64V
11	2.33V
12	2.51V
13	2.51V
14	3.01V

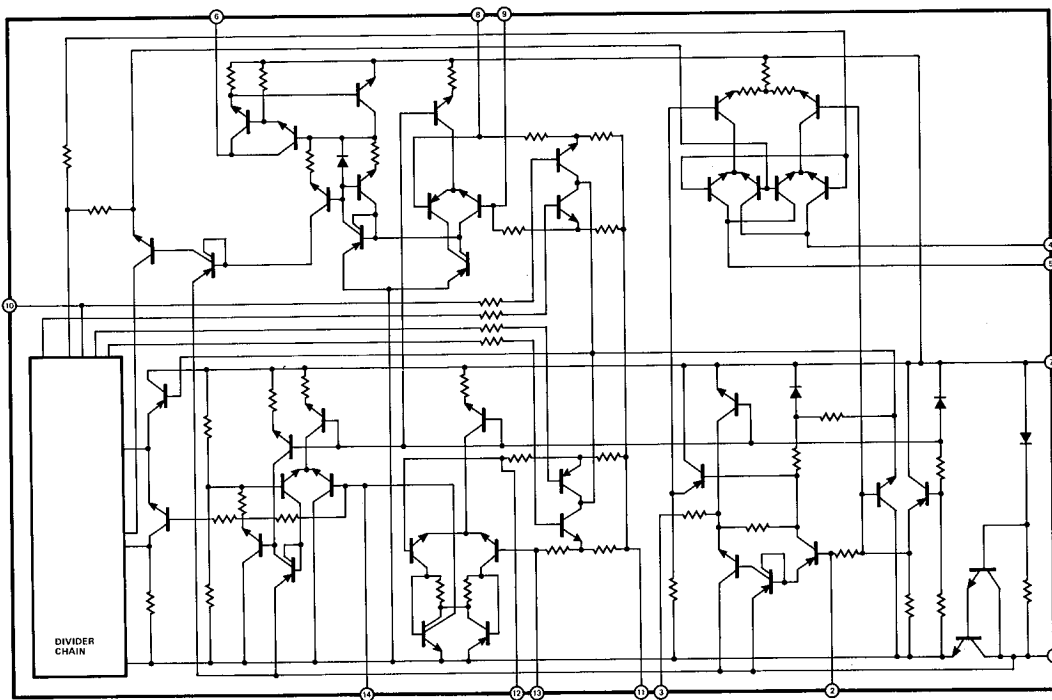
IC201



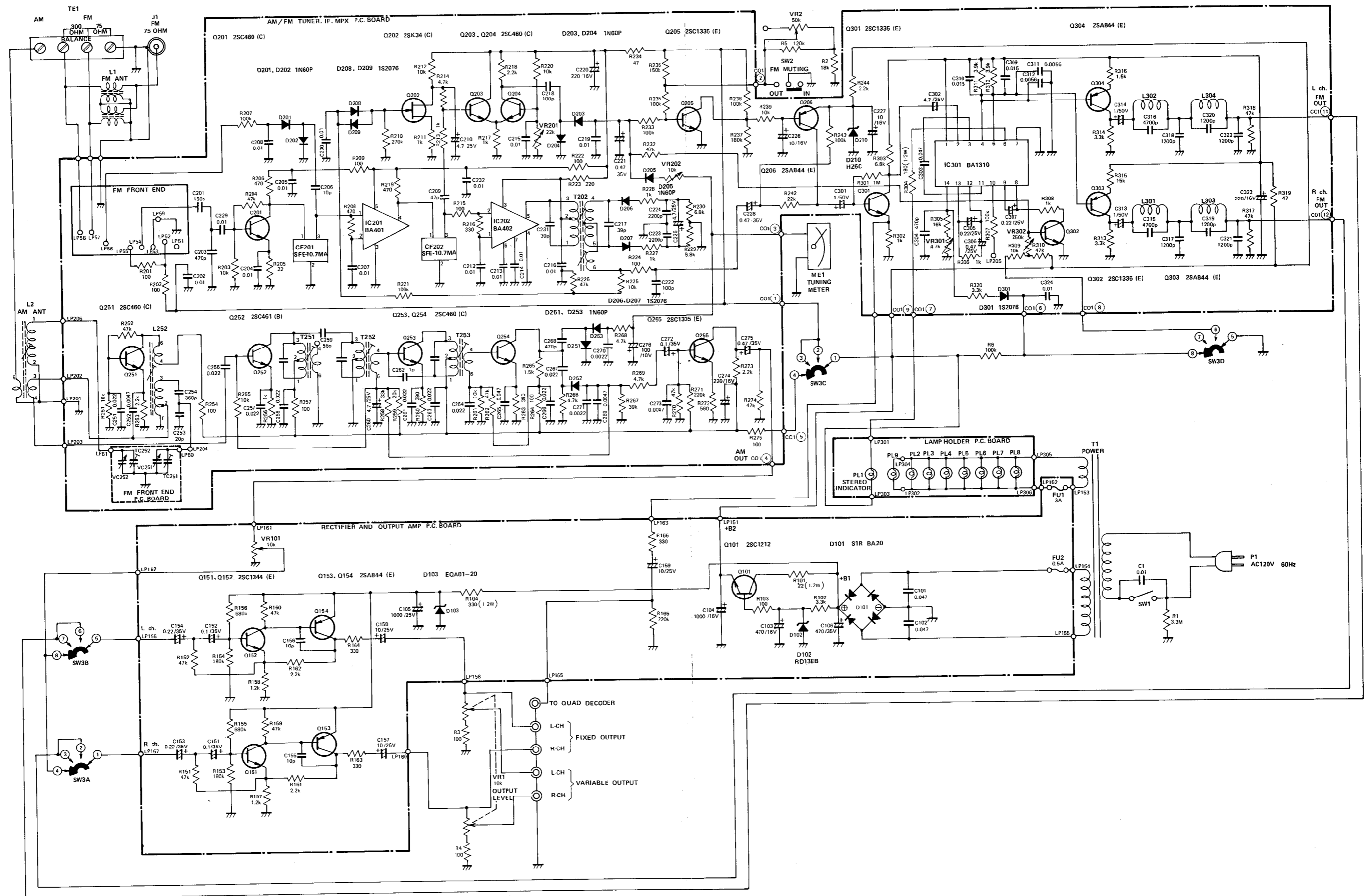
IC202



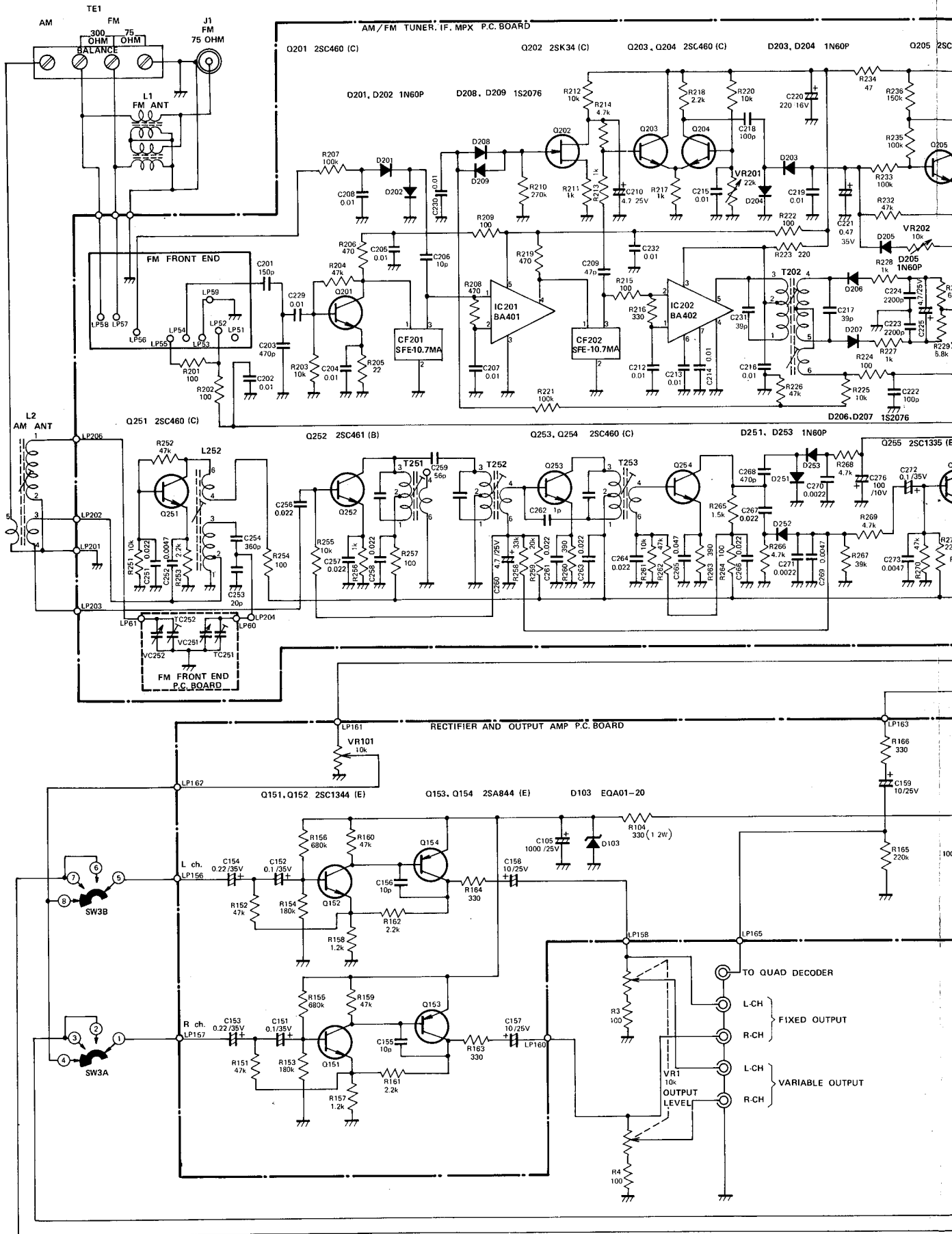
IC301



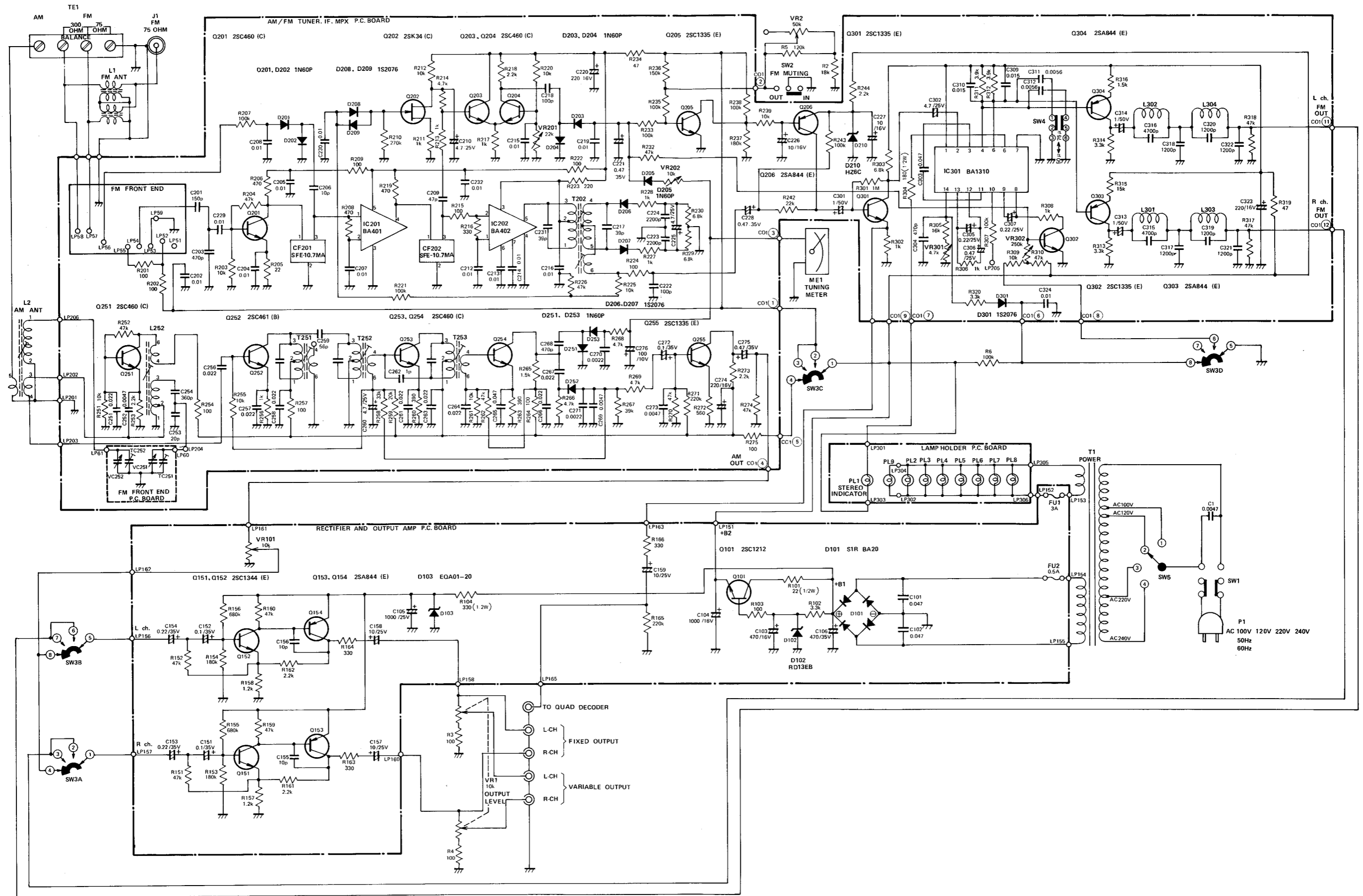
SCHEMATIC DIAGRAM – REGULAR – MODEL T403



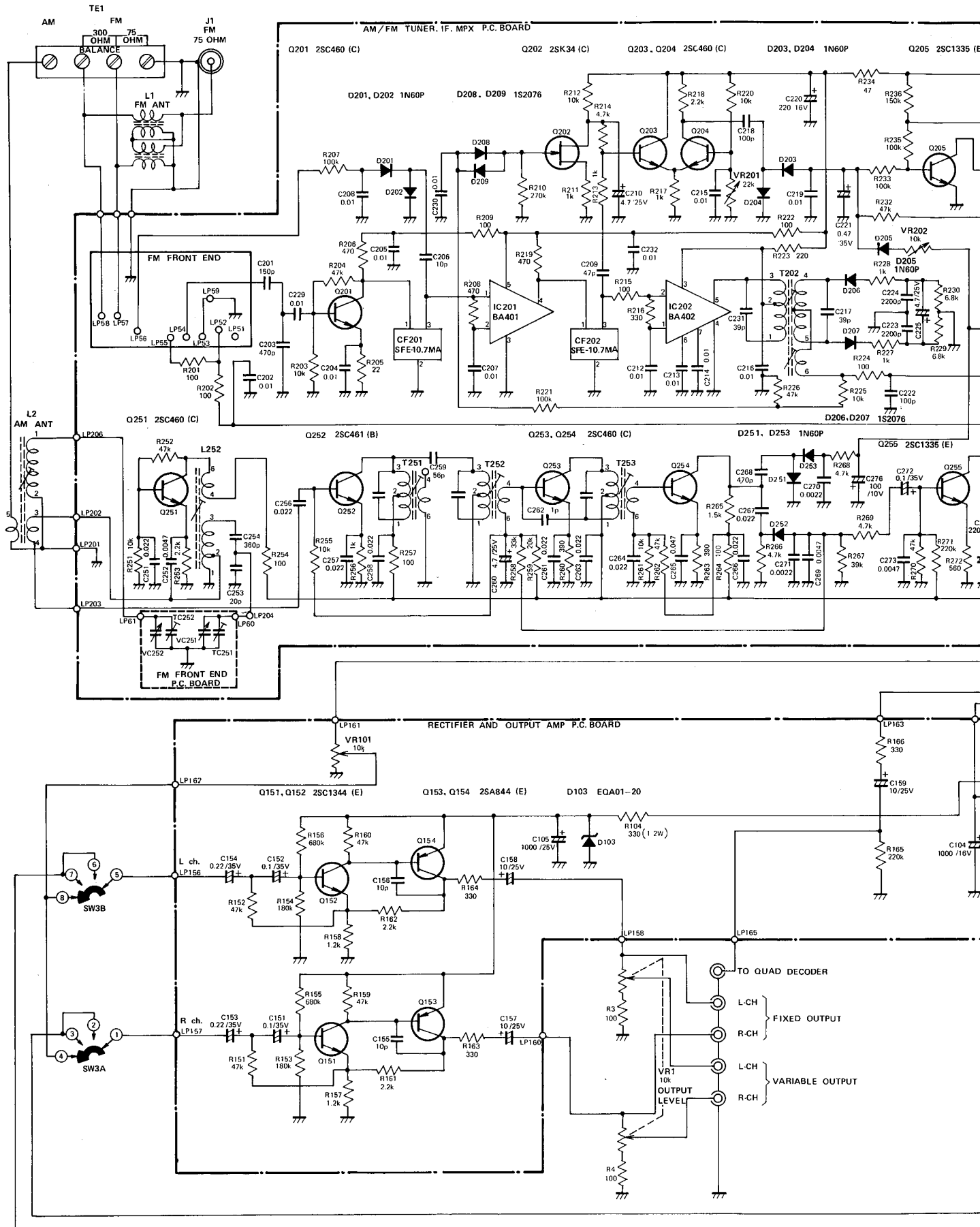
SCHEMATIC DIAGRAM – REGULAR – MODEL T403

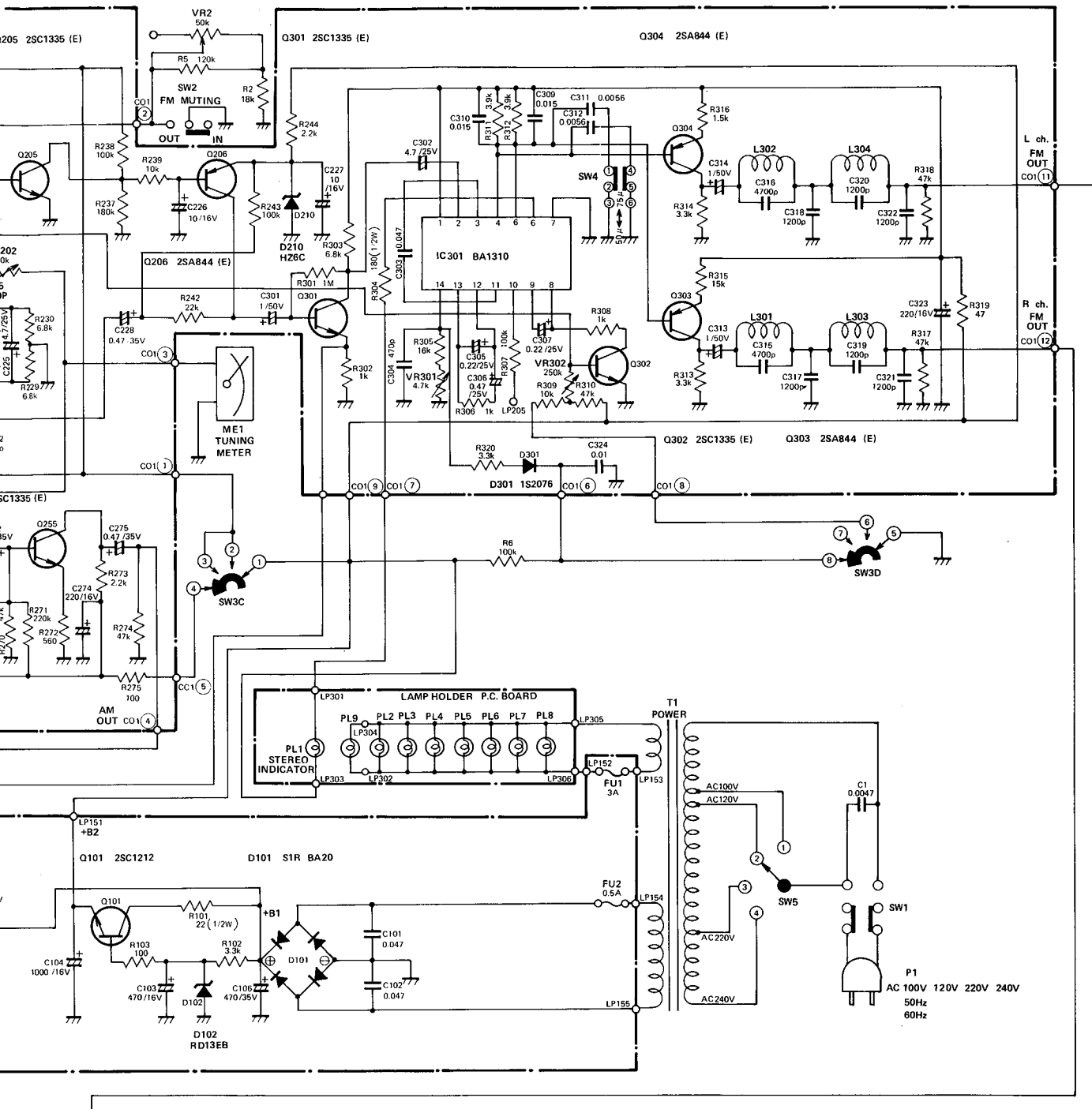


SCHEMATIC DIAGRAM – MULTIVOLTAGE – MODEL T403

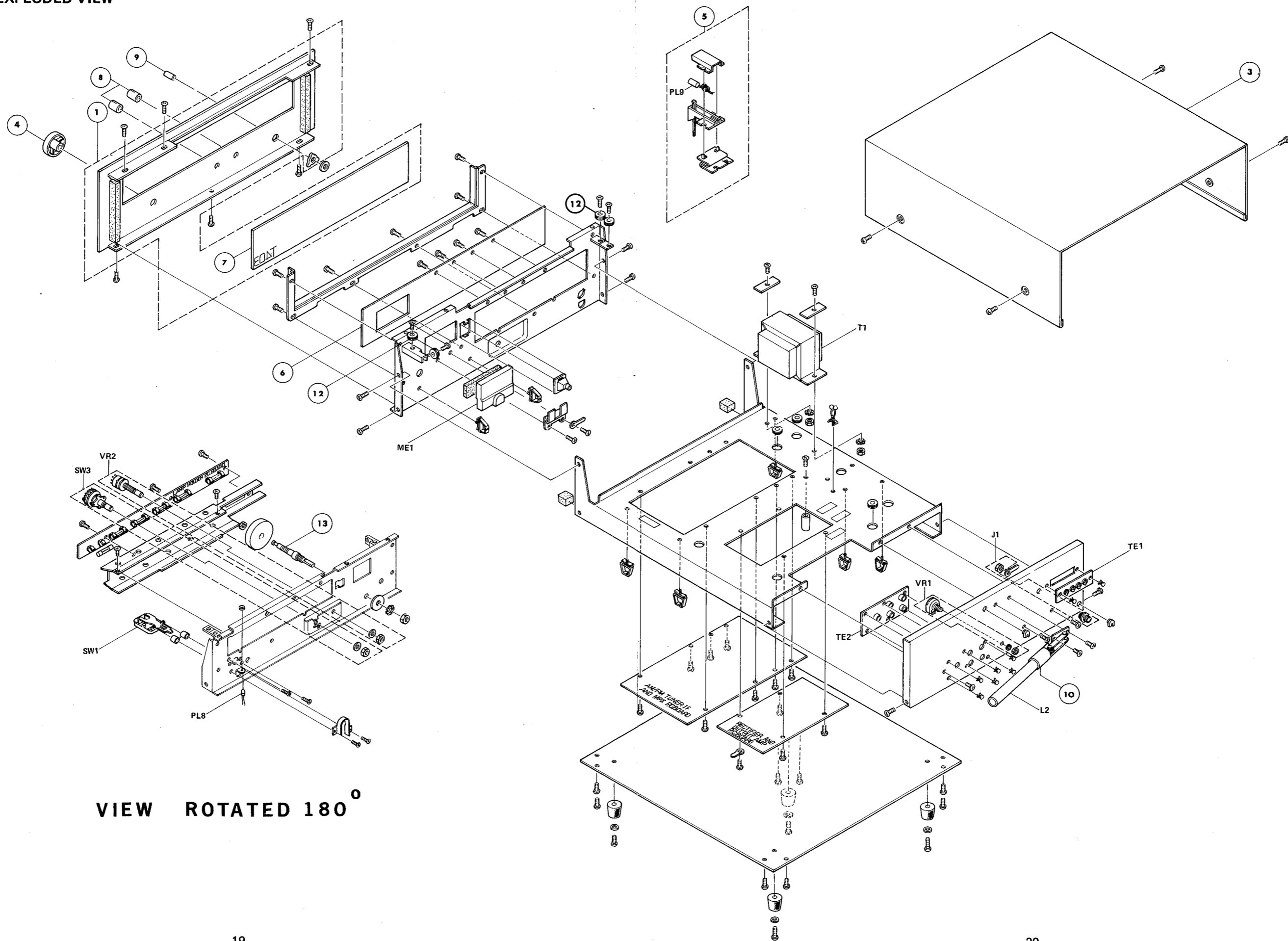


SCHEMATIC DIAGRAM – MULTIVOLTAGE – MODEL T403

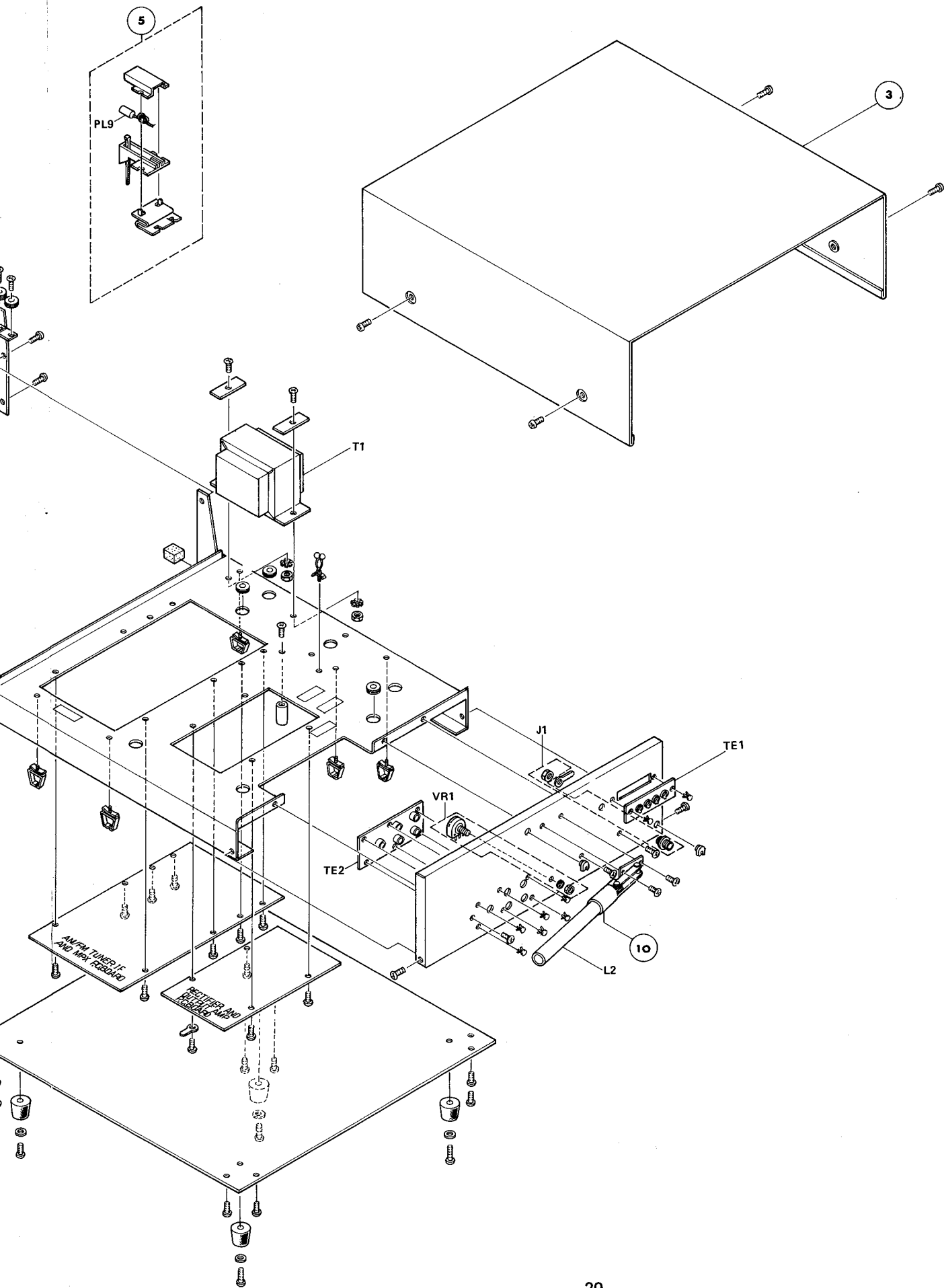


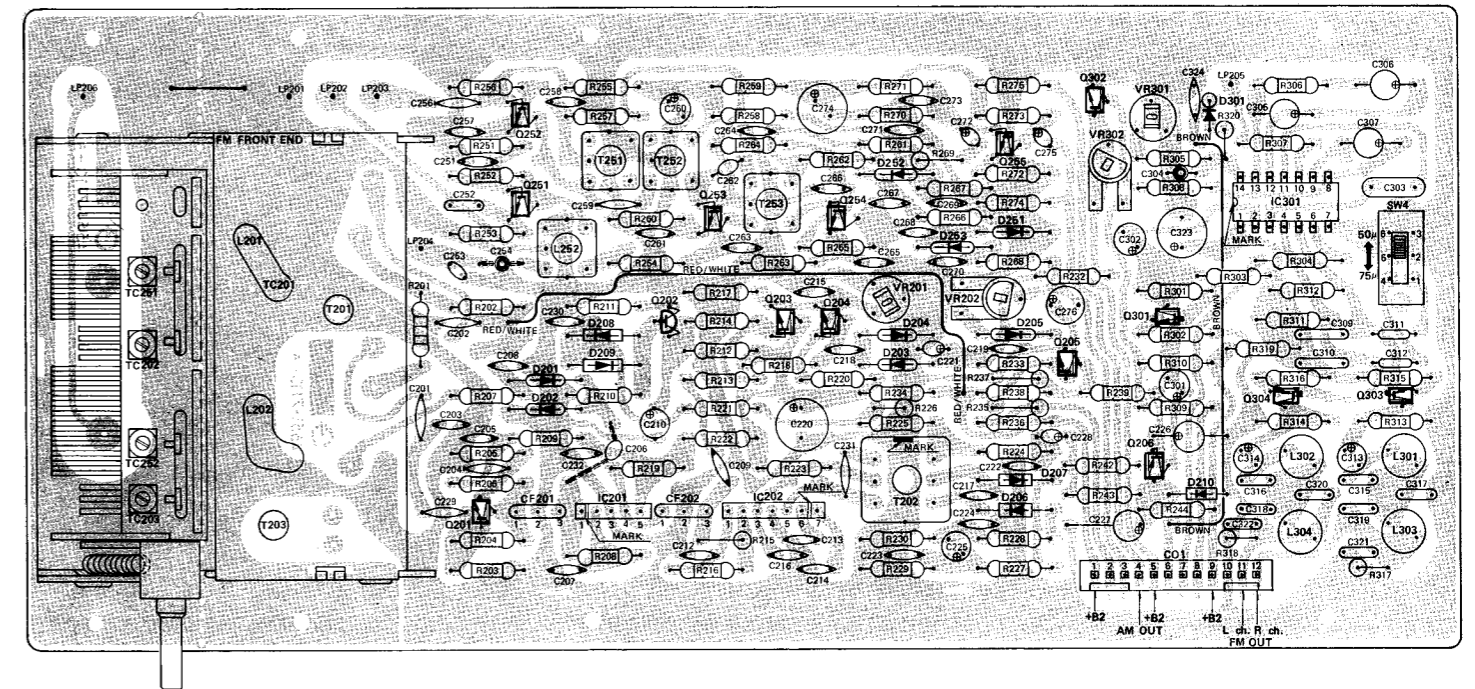
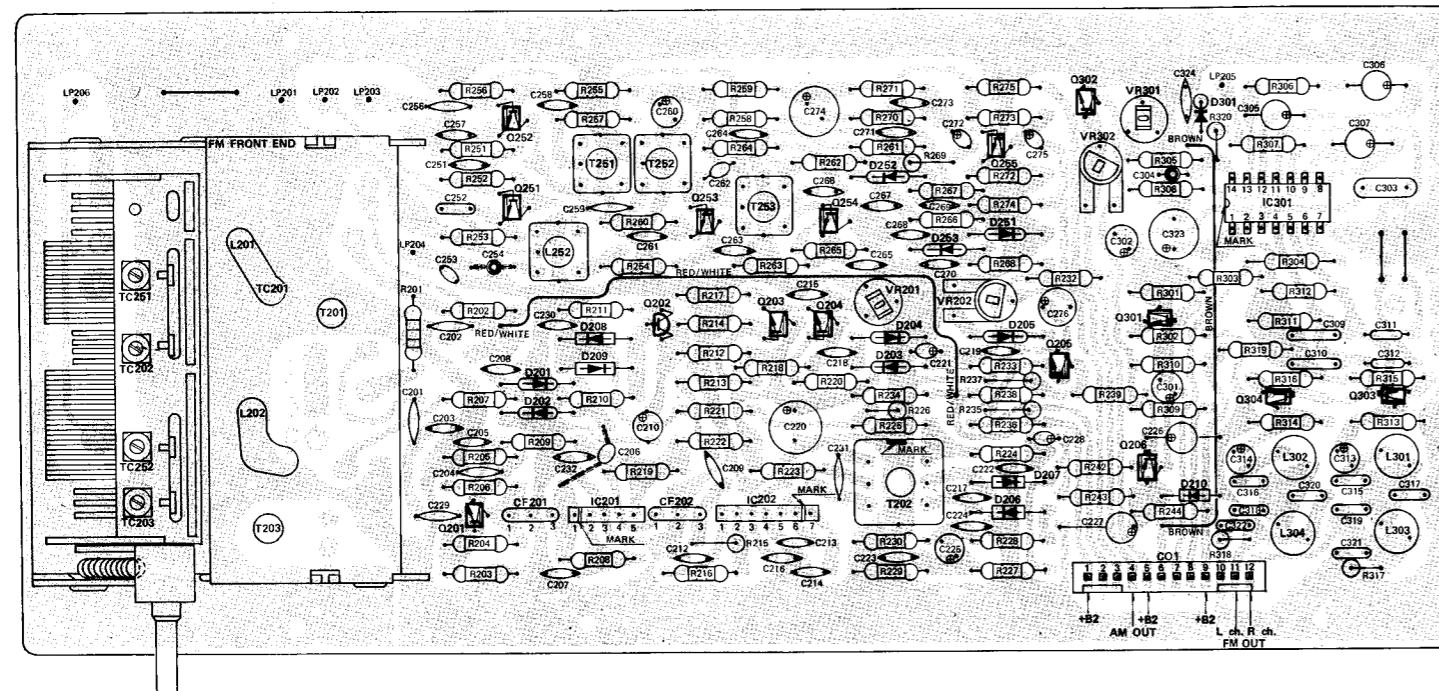


GENERAL UNIT EXPLODED VIEW



VIEW ROTATED 180°



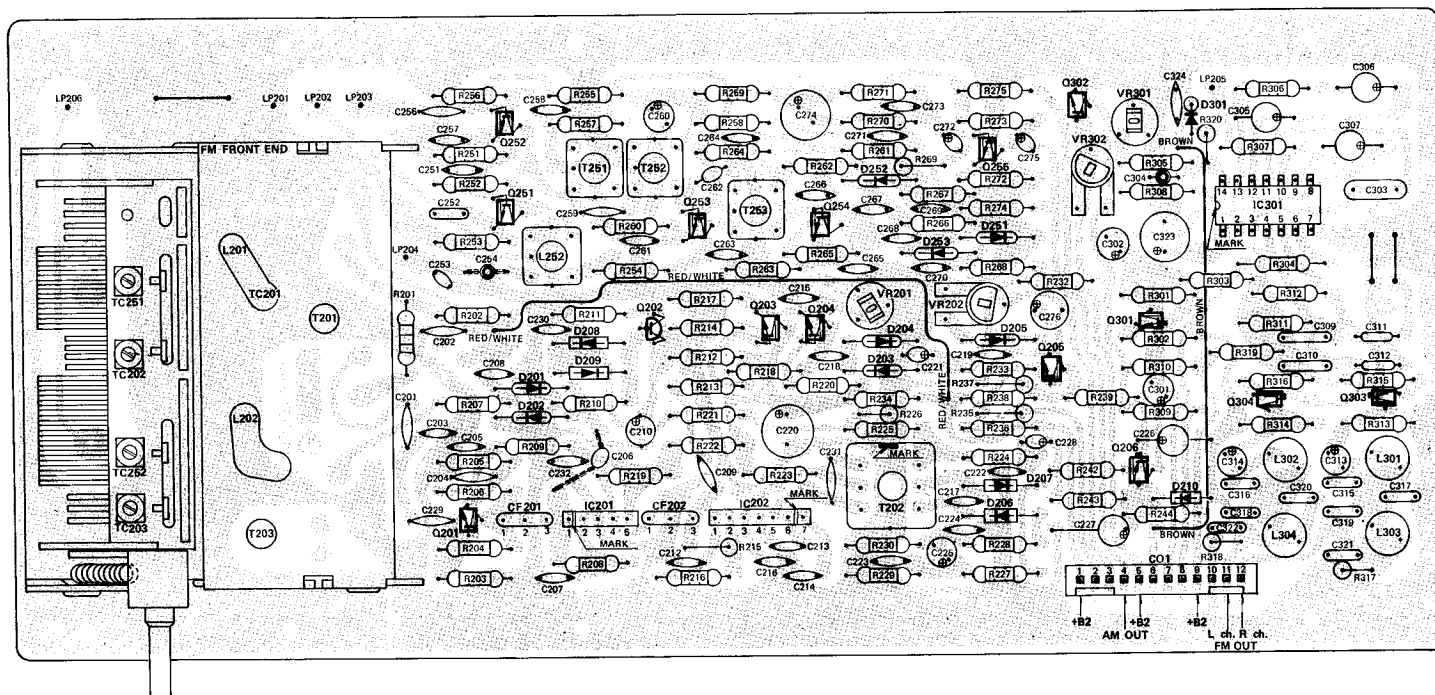


CIRCUIT REF.	H/K PART NO.	DESCRIPTION
Regulator	00133346	P.C. Board Assy.
Multivoltage	00133355	AM/FM Tuner, If, MPX
RESISTORS		
VR201	23531305	Variable Resistor, 22K Ohm
VR202	23530559	Variable Resistor, 10K Ohm
VR301	23530554	Variable Resistor, 4.7K Ohm
VR302	23530558	Variable Resistor, 250K Ohm
TRANSISTORS		
Q201, 203, 204	43029472*	Transistor, 2SC460(C) FM IF Amp, Differential Amp.
Q202	43031311*	F.E.T., 2SK34(C) Center Zero Research
Q205	43030569*	Transistor, 2SC1335(E) DC Amp.
Q206	43031312*	Transistor, 2SA844(E) Muting
Q251, 253, 254	43029472*	Transistor, 2SC460(C) AM OSC
Q252	43029471*	Transistor, 2SC461(B) AM Mix
Q255	43030569*	Transistor, 2SC1335(E) AM IF Amp.
Q301, 302	43030569*	Transistor, 2SC1335(E) Composite Signal Amp Mono-Stereo Switching
Q303, 304	43031312*	Transistor, 2SA844(E) MPX Output Amp.

CIRCUIT REF.	H/K PART NO.	DESCRIPTION
INTEGRATED CIRCUIT		
IC201	43031313*	Integrated Circuit, BA401 FM IF Amp.
IC202	43031314*	Integrated Circuit, BA402, FM IF Amp.
IC301	43130555*	Integrated Circuit, BA1310 MPX
DIODES		
D201, 202, 203, 204, 205, 251, 252, 253	41029290*	Diode, 1N60P
D206, 207, 208, 209	41030552*	Diode, 1S2076
D210	42031315*	Zener Diode, HZ6C
D301	41030552*	Switching Diode, 1S2076
COILS AND TRANSFORMERS		
L252	12031316	Coil, AM OSC
L301, 302, 303, 304	12031317	Coil, 19 KHZ, 38 KHZ Trap (15 mH)
T202	10131318	Transformer, Discriminator
T251, 252	10130556	Transformer, AM IF
T253	10130557	Transformer, AM IF

CIRCUIT REF.	H/K PART NO.	DESCRIPTION
FILTER		
CF201, 202	12030549	Ceramic Filter, FM IF (10.7 MHZ)
MISCELLANEOUS		
	00233326	FM Front End Connector (12 Pin)

AM/FM TUNER, IF, MPX P.C. BOARD



CIRCUIT REF.

Regulator
Multivoltage

H/K PART NO.

00133346
00133355

DESCRIPTION

P.C. Board Assy.
AM/FM Tuner, If, MPX

RESISTORS

VR201	23531305
VR202	23530559
VR301	23530554
VR302	23530558

TRANSISTORS

Q201, 203, 204	43029472*
Q202	43031311*
Q205	43030569*
Q206	43031312*
Q251, 253, 254	43029472*
Q252	43029471*
Q255	43030569*
Q301, 302	43030569*
Q303, 304	43031312*

Transistor, 2SC460(C) FM IF Amp,
Differential Amp.
F.E.T., 2SK34(C) Center Zero Research
Transistor, 2SC1335(E) DC Amp.
Transistor, 2SA844(E) Muting
Transistor, 2SC460(C) AM OSC
Transistor, 2SC461(B) AM Mix
Transistor, 2SC1335(E) AM IF Amp.
Transistor, 2SC1335(E) Composite
Signal Amp Mono-Stereo Switching
Transistor, 2SA844(E) MPX Output
Amp.

CIRCUIT REF.

H/K PART NO.

INTEGRATED CIRCUIT

IC201	43031313*
IC202	43031314*
IC301	43130555*

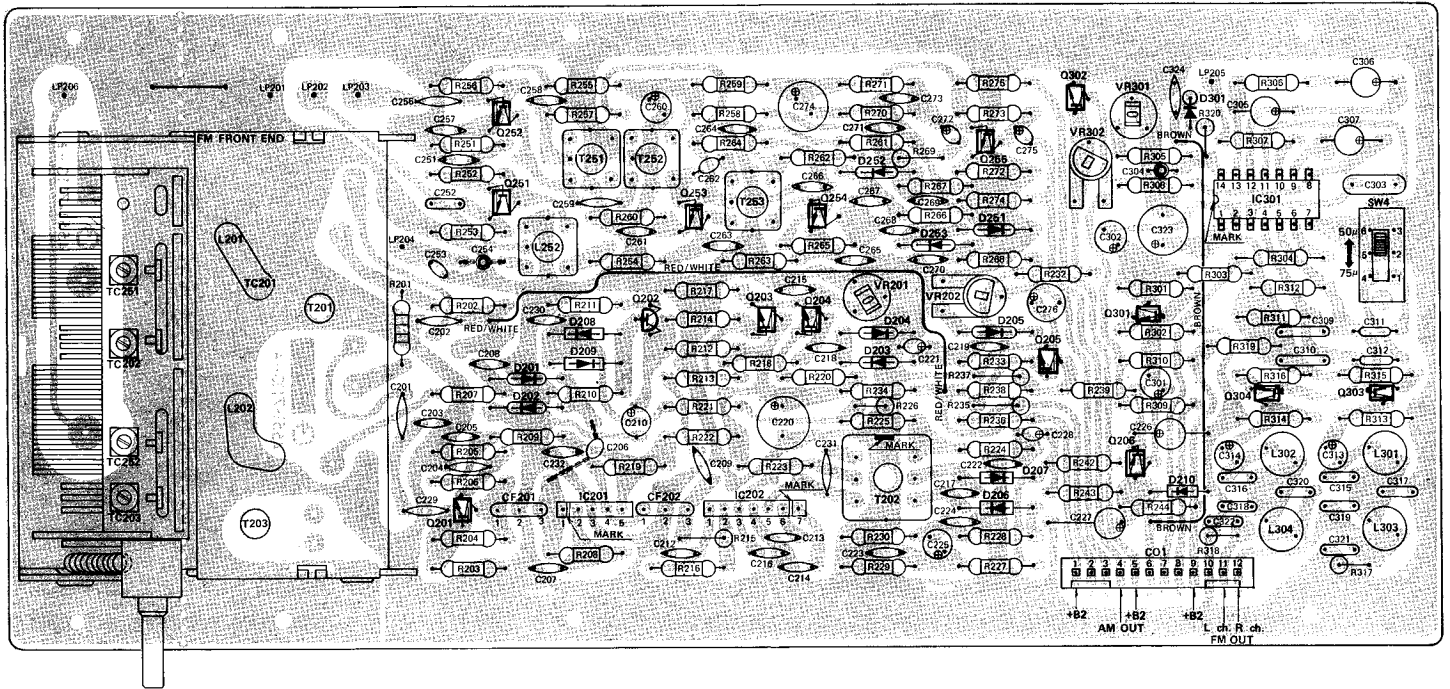
DIODES

D201, 202, 203, 204, 205, 251, 252, 253	41029290*
D206, 207, 208, 209	41030552*
D210	42031315*
D301	41030552*

COILS AND TRANSFORMERS

L252	12031316
L301, 302, 303, 304	12031317
T202	10131318
T251, 252	10130556
T253	10130557

AM/FM TUNER, IF, MPX P.C. BOARD – MULTIVOLTAGE



DESCRIPTION

Integrated Circuit, BA401 FM IF Amp.
 Integrated Circuit, BA402, FM IF Amp.
 Integrated Circuit, BA1310 MPX

Diode, 1N60P

Diode, 1S2076

Zener Diode, HZ6C
 Switching Diode, 1S2076

Coil, AM OSC
 Coil, 19 KHZ, 38 KHZ
 Trap (15 mH)
 Transformer, Discriminator
 Transformer, AM IF
 Transformer, AM IF

CIRCUIT REF.

FILTER
 CF201, 202

MISCELLANEOUS

H/K PART NO.

12030549

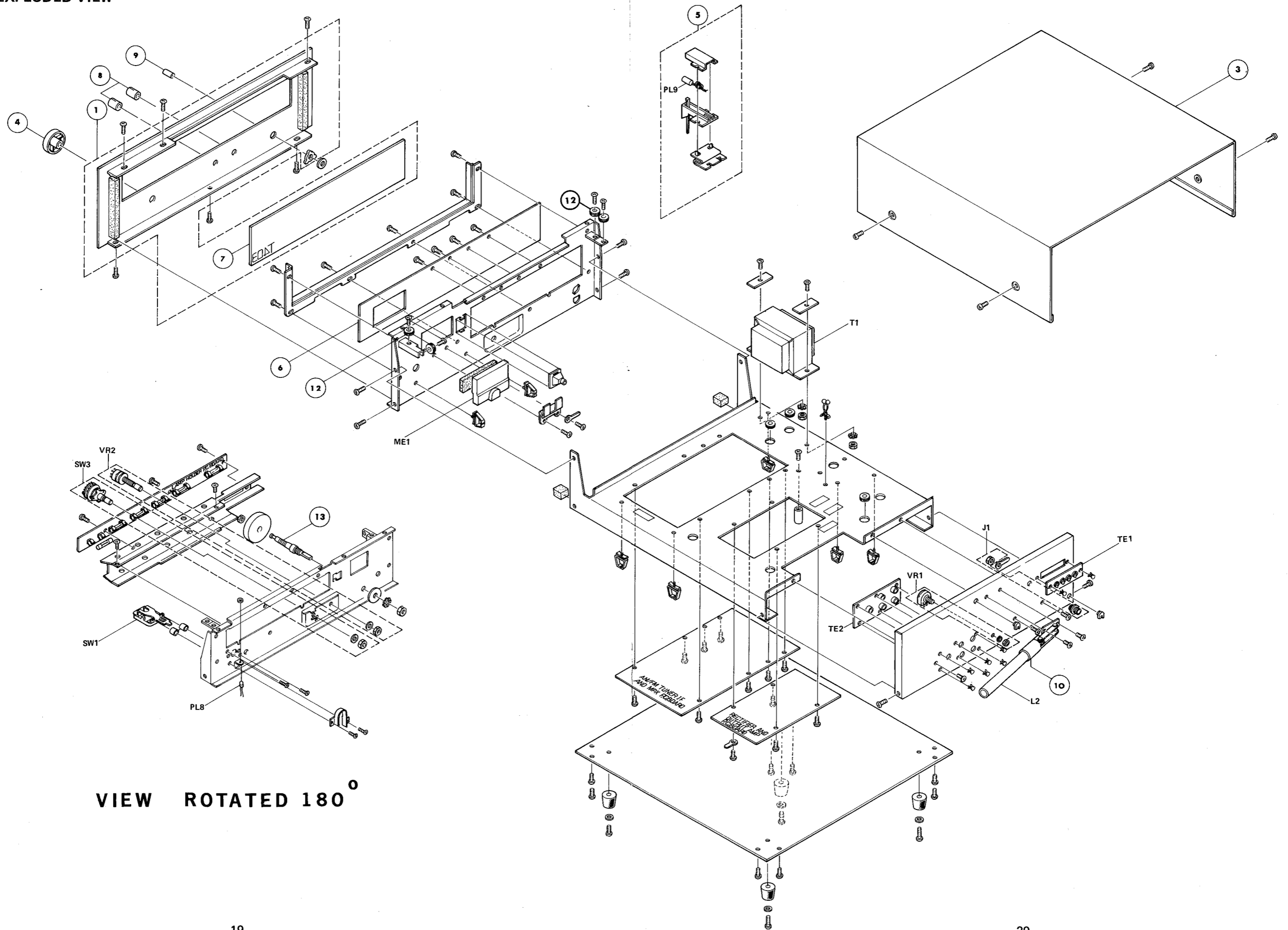
00233326

DESCRIPTION

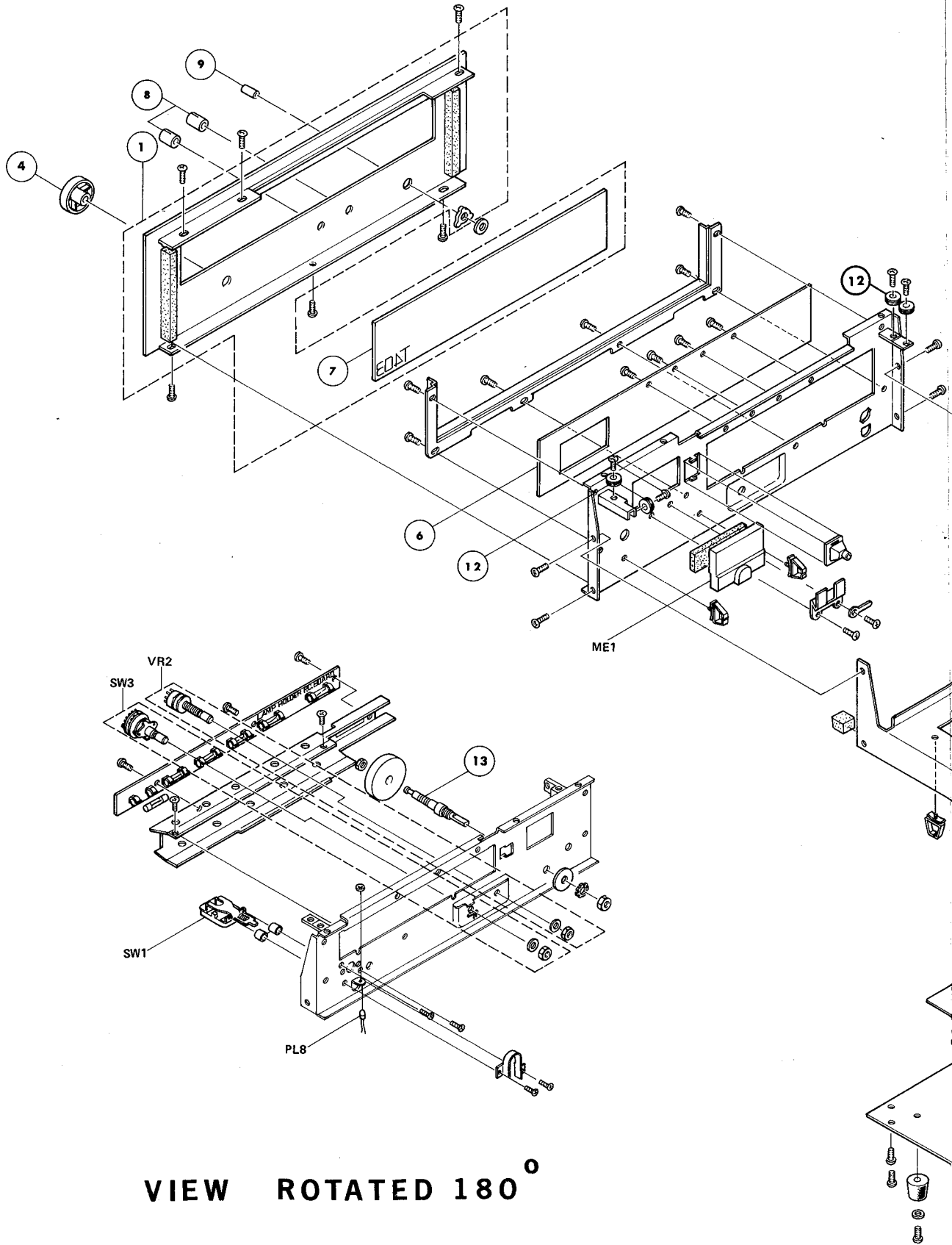
Ceramic Filter,
 FM IF (10.7 MHZ)

FM Front End
 Connector (12 Pin)

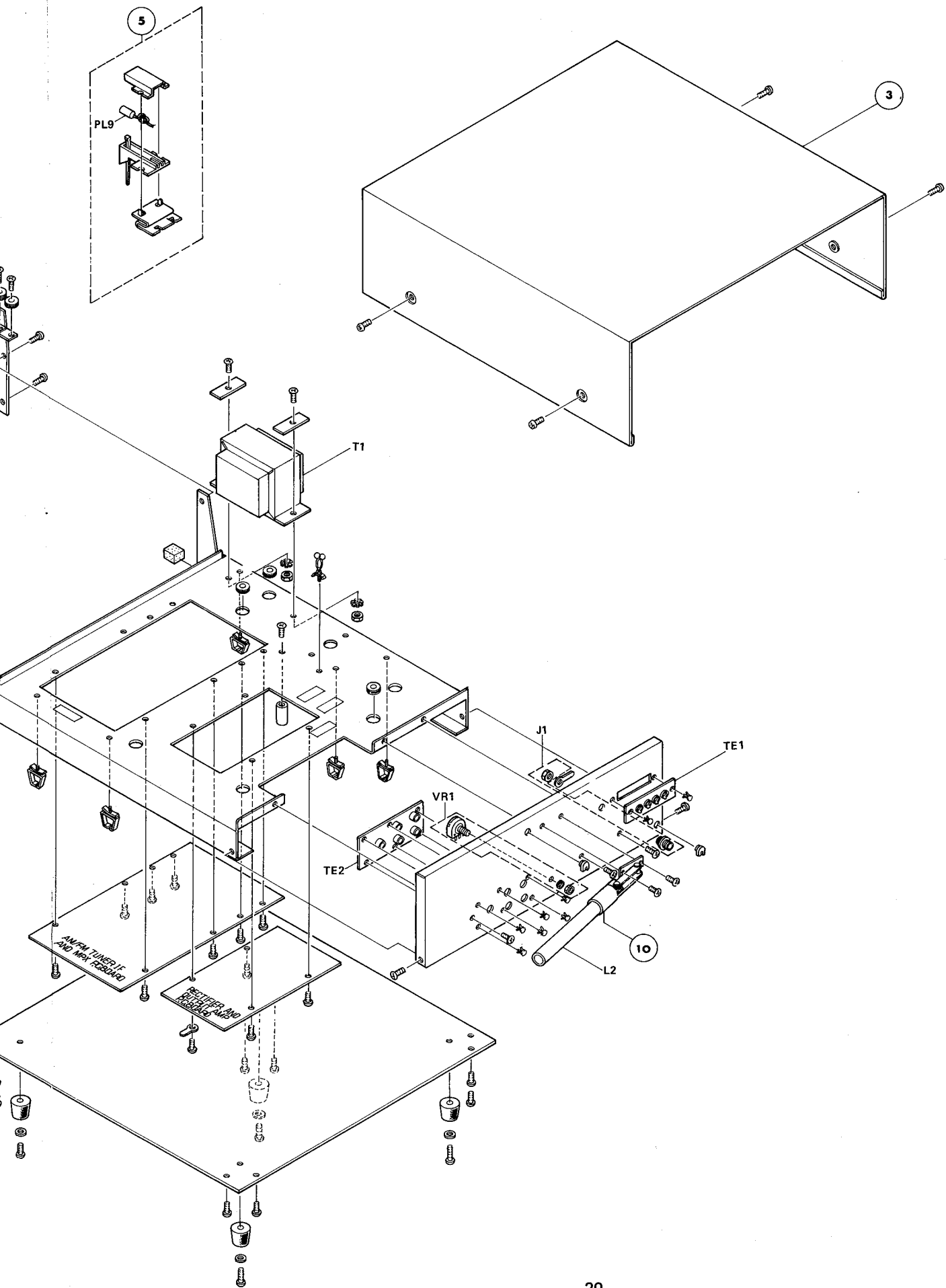
GENERAL UNIT EXPLODED VIEW



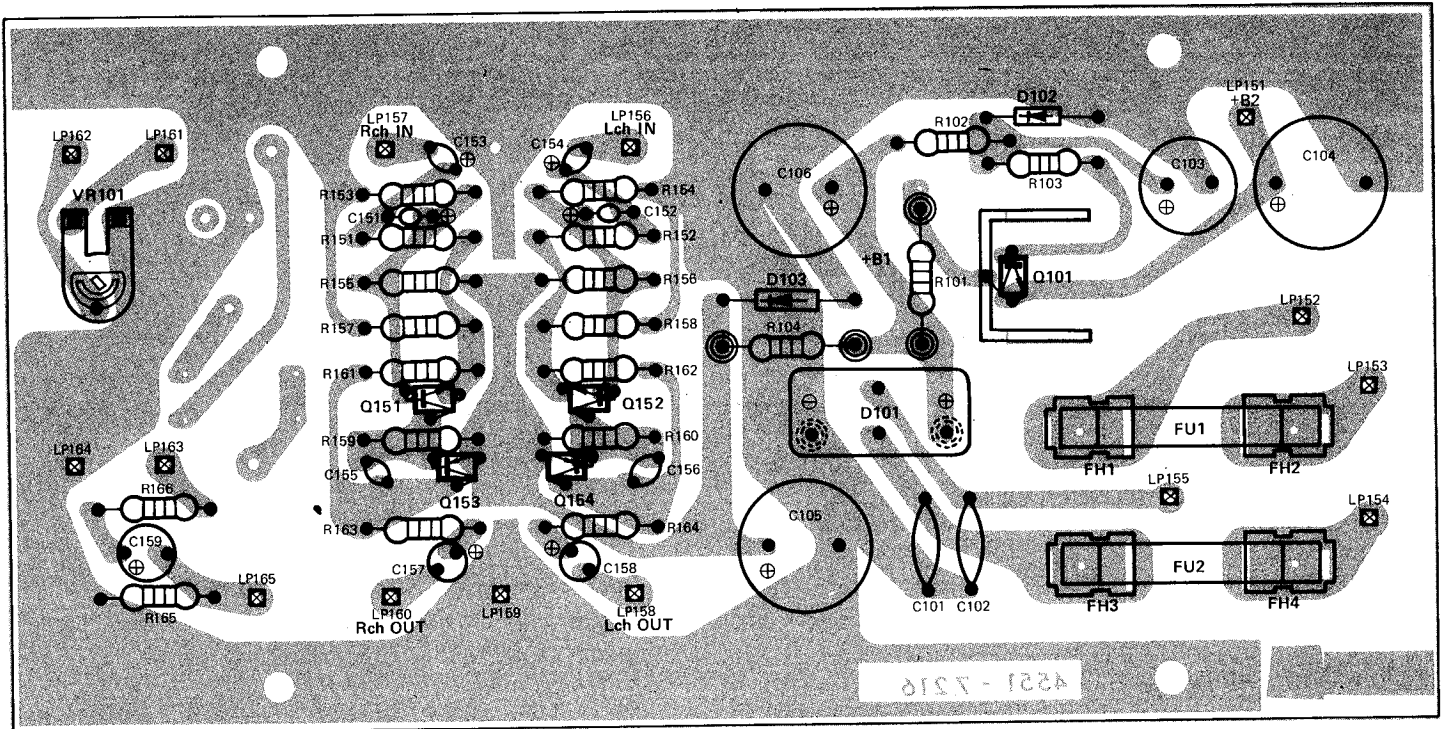
GENERAL UNIT EXPLODED VIEW



VIEW ROTATED 180°



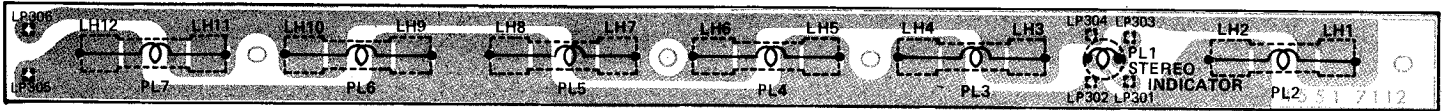
RECTIFIER AND OUTPUT AMP P.C. BOARD



CIRCUIT REF.	H/K PART NO.	DESCRIPTION
	00133347	P.C. Board Assy. Rectifier and Output Amp
RESISTOR		
VR101	23530559	Variable Resistor 10K Ohm
CAPACITORS		
C104	31831472	1000UF + 50%—10% 16V Electrolytic
C105	31832153	1000UF +50%—10% 25V Electrolytic
C106	31833300	470UF +100%—10% 35V Electrolytic
TRANSISTORS		
Q101	43031425*	Transistor, 2SC1212(C) Voltage Rectifier
Q151, 152	43028535*	Transistor, 2SC1344(E) Output Amp.
Q153, 154	43031312*	Transistor, 2SA844(E) Output Amp
DIODES		
D101	42131296*	Bridge Silicon, Rectifier S1R BA20
D102	42032760*	Zener Diode, RD13EB
D103	42033301*	Zener Diode, EQA-01-20
MISCELLANEOUS		
FU1	45031336*	Fuse, 3A
FU2	45031327*	Fuse, 0.5A
FH1, 2, 3, 4	65431463*	Fuse Holder

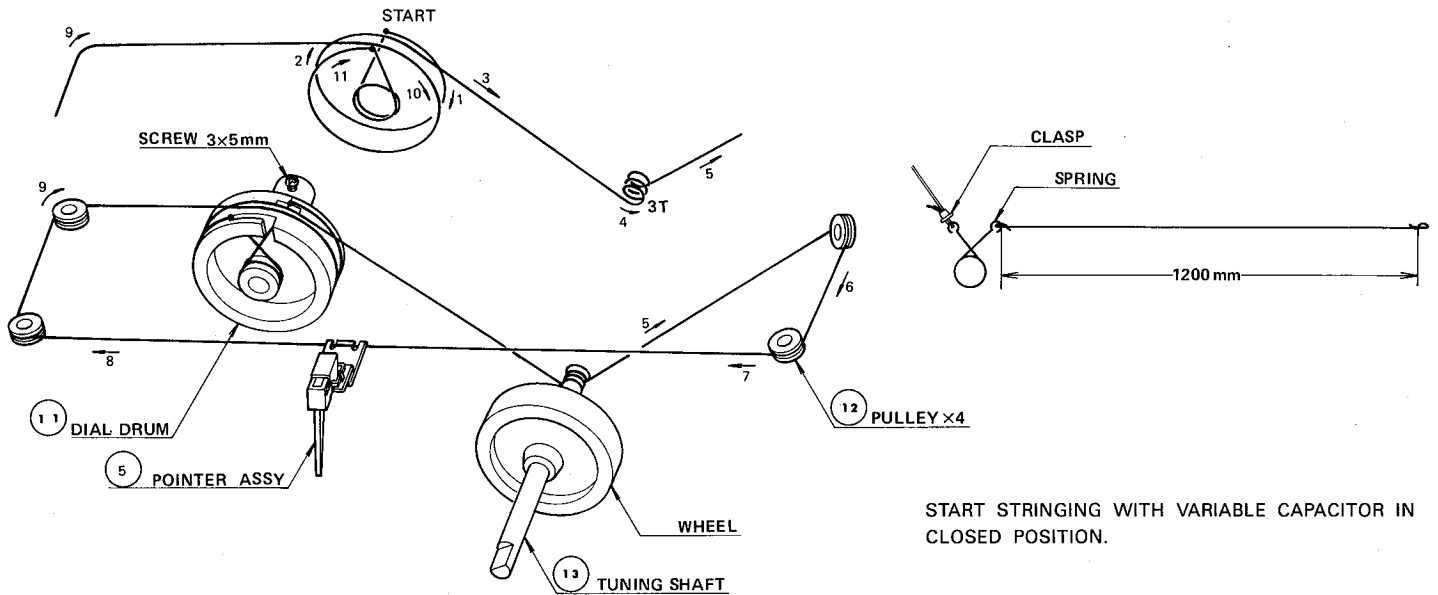
LAMP HOLDER P.C. BOARD

VIEWED FROM
CIRCUIT SIDE



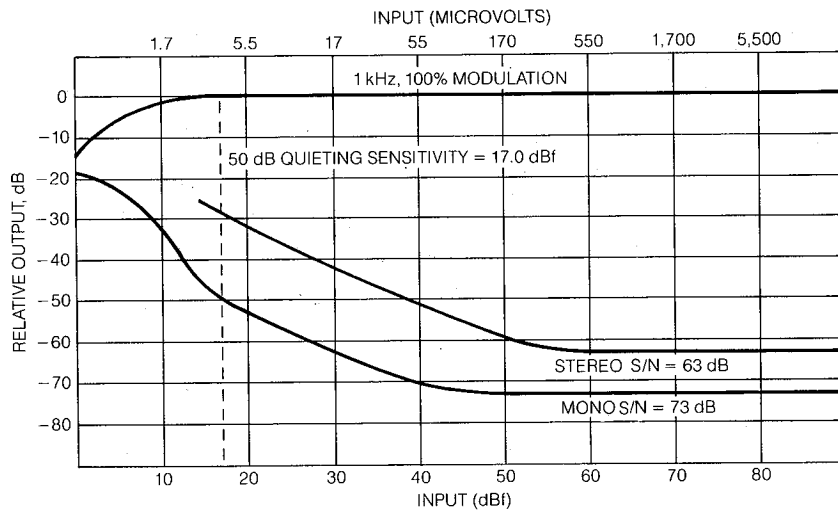
CIRCUIT REF.	H/K PART NO.	DESCRIPTION
	00133348	P.C. Board Assy
PL1	46531326*	Lamp Holder Stereo Indicator Lamp, 6.3V 40 mA
PL2, 3, 4, 5, 6, 7	46524956*	Dial Illuminator Lamp, 6.3V 250 mA

DIAL CORD STRINGING



SPECIFICATIONS

Limiter Saturation:	less than 14.8dBf
Multiplex Separation:	greater than 30dB
Selectivity:	greater than 50dB
Capture Ratio:	less than 2.0dB
Audio Frequency Response:	6Hz to 120kHz - 3dB
Harmonic Distortion:	0.5% mono 0.7% stereo
AM Rejection:	better than - 55dB
Image Rejection:	better than - 45dB
IF Rejection:	better than - 80dB
Pilot Signal Rejection:	better than - 45dB
De-emphasis:	75 microseconds
Mute Threshold:	22.1 to 47.2dBf (variable)
Mute Suppression:	better than - 60dB
Audio Output:	fixed: 2.0 volts variable: 20 millivolts to 2.0 volts
Dimensions:	15¼" W x 15½" D x 5½" H (400 mm x 394 mm x 140 mm)
Weight:	15 lbs 6 oz (7.0 kg)



TYPICAL T403 QUIETING CURVES

CHASSIS PARTS LIST

IDENT. NO.	REF. DES.	H/K PART NO.	DESCRIPTION
	L2	20531334	AM Ferrite Bar Antenna
	T1	10133349	Power Transformer RV
	VR1	21533295	Variable Resistor, 10K ohm, Output Level
	VR2	21533296	Variable Resistor, 50K ohm, FM Muting W/SW2
	SW1	25032117	Push Switch, Power
	SW3	24033297	Function Selector Switch
	ME1	12533325	Tuning Meter
	J1	65433298	FM External Antenna Jack
	TE1	65129519	AM/FM External Antenna Terminal
	TE2	65433299	Output Terminal
	PL8	46531331*	Power Indicator Lamp, 6.3V 50mA
	PL9	46531330*	Pointer Light, 6.3V 30mA
1		00233327	Front Panel Assembly
3		60133328	Cabinet Top Assembly
4		63233329	Knob Assembly, Tuning
5		00233330	Dial Pointer Assembly
6		61033331	Dial Panel
7		61033332	Clear Panel, Dial Panel
8		63231376	Knob, Function and Muting
9		63231378	Push Button, Power
10		61631380	AM Ferrite Bar Antenna Holder
11		60433333	Dial Drum
12		60433334	Pulley, Dial Cord
13		60433335	Tuning Shaft
MULTIVOLTAGE			
	SW1	25033336	Push Switch, Power
	SW5	24031338	Rotary Switch, Power Source Voltage Selector
	T1	10133337	Power Transformer MV
		63232869	Push Button, Power

NOTE TO WARRANTY STATIONS: Items marked by asterisk (*) are recommended spare parts stock. Printed circuit board assembly numbers are shown for reference only. Harman/Kardon does not normally supply assembled printed circuit boards.

NOTE: To speed handling of your order be sure to include both the model and serial numbers, in addition to the quantity, part number and part description of the items ordered. Orders from independent dealers, independent servicemen, and retail customers will be shipped on a cash in advance basis. Harman/Kardon reserves the right to substitute equivalent parts for those originally installed in this chassis. All parts should be ordered from Harman/Kardon, 55 Ames Court, Plainview, L.I., N.Y. 11803, Att: Parts Department.